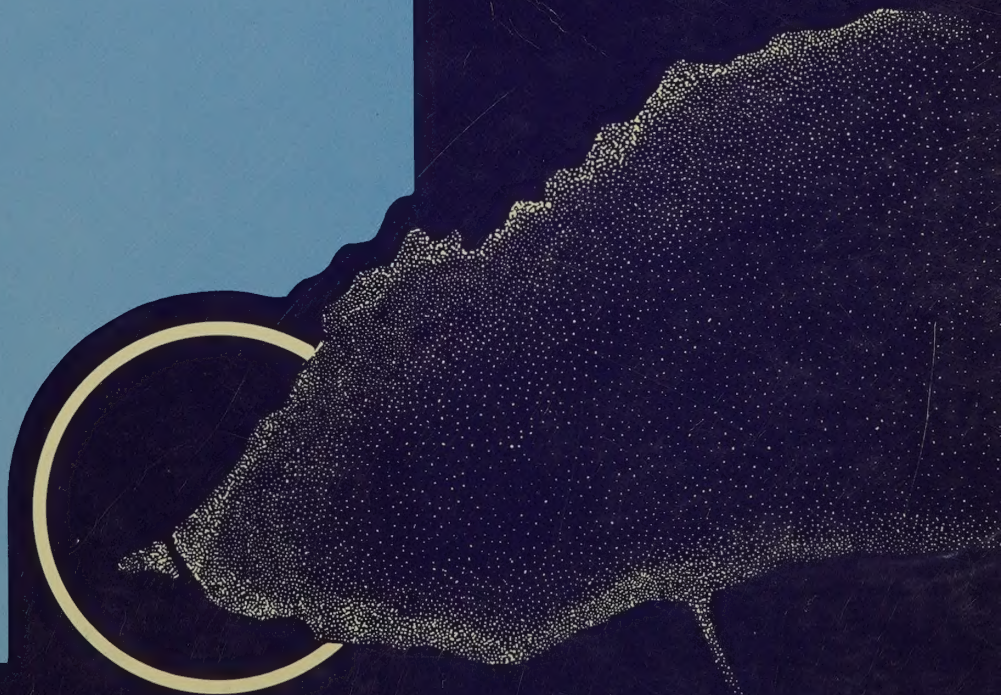


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THE HALTON-WENTWORTH WATERFRONT STUDY

volume 1
concepts for
waterfront development

Prepared for the
Waterfront Co-ordinating and Technical Committees
By
Acres Consulting Services Limited
Project Planning Associates Limited



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WATERFRONT STUDY

VOLUME 1
CONCEPTS FOR WATERFRONT DEVELOPMENT

Prepared for the Coordinating and
Technical Committees

by

Acres Consulting Services Limited
and

Project Planning Associates Limited

June 1974

ERRATA

Letter of Transmittal - 1st Paragraph, 4th line -
"irreplacable" should read "irreplaceable".

Pg. 4, 2nd paragraph, 9th line-"unamimity" should read
"unanimity".

Pg. 13, 2nd paragraph, 5th line "promentories" should
read "promontories".

Pg. 16, 2nd paragraph, 1st line - "Undesireable" should
read "Undesirable".

Pg. 19, 6th paragraph, 4th line - "desireable" should
read "desirable".

Pg. 20, 7th paragraph, 10th line - "than" should read
"that".

Pg. 25, 2nd paragraph, 4th line - "as" should read "a".

Pg. 36, 5th paragraph, 2nd line - "S1" should read "S7".

Pg. 36, 5th paragraph, last line - "each" should read
"east".

Pg. 42, 5th paragraph, 8th line - "persent" should read
"present".

Pg. 47, 1st paragraph, 7th line - ".stability" should read
"stability" (no dot in front).

Pg. 47, 1st paragraph, 10th line - "long-term" should
read ".long-term".

Pg. 52, 3rd paragraph, 5th line "(B37)" should read "(B27)".

Pg. 52, 5th paragraph, 6th line - "instal" should read
"install".

Pg. 53, 4th paragraph, 2nd line - "B33" should read "B43".

Pg. 55, 3rd paragraph, 3rd line - "in" should read "is".

Pg. 59, 3rd paragraph, 6th line - "a suitable" should read "suitable" (delete "a").

Pg. 63, 4th paragraph, 4th line - "treatmant" should read "treatment".

Pg. 68, 2nd paragraph, 7th line - "that" should read "than".

Pg. 71, 6th paragraph, 1st line - "Undesireable" should read "Undesirable".

Pg. 73, 3rd paragraph, 7th line - "desireable" should read "desirable".

Pg. 73, 3rd paragraph, 12th line - "desireable" should read "desirable".

Pg. 83, 4th paragraph, 10th line - "propogating" should read "propagating".

Pg. 98, 4th paragraph, 6th line - "re-zoned" should read "rezoned".

Pg. 99, 1st paragraph, 5th line - "and" should read "an".

Pg. 102, 5th paragraph, 3rd line - "B39" should read "B49".

Pg. 106, 2nd paragraph, 2nd line - "ship" should read "strip".

Pg. 109, 2nd paragraph, 3rd line - "picnicing" should read "picnicking".

Pg. 114, 1st paragraph, 1st line - "picnicing" should read "picnicking".

Pg. 126, 1st paragraph, 3rd line - "promentories" should read "promontories".

Pg. 126, 2nd paragraph, 11th line - "estimate" should read "estimates".

Pg. 126, 3rd paragraph, 1st line - "estimate" should read "estimated".

Pg. 129, 3rd paragraph, 2nd line - "defineable" should read "definable".

Pg. 145, 1st paragraph, 1st line - change full-stop after after century to comma.

Pg. 145, 1st paragraph, 2nd line - "When" should read "when".

Pg. 153, 2nd paragraph, 2nd line - "treatened" should read "threatened".

Pg. 155, 2nd paragraph, 4th line - "(Map 2)" should read "H20".

Pg. 158, 1st paragraph, 5th line - "H33" should read "H35".



50 years
of service
1924-1974

June, 1974

Waterfront Co-ordinating Committee
The Halton-Wentworth Conservation Authority
225 Main Street
Milton, Ontario

Attention: Mr. B. Humphreys, Chairman

Dear Sir:

We are pleased to submit Volume I of the Halton-Wentworth Waterfront Study outlining the findings and measures recommended for the conservation and development of this irreplaceable community resource.

The study was made by Acres Consulting Services Limited and Project Planning Associates Limited, with the public participation and social planning elements carried out by Interthink Limited.

Volume I is the first of two volumes which provides a conceptual framework for the planning and development of the western shoreline of Lake Ontario. This particular area is subject to increasing pressures from both the elements and intensive urban growth. It is imperative at this time that the policies, priorities and subsequent remedial action for conservation and development of this shoreline be clarified and acted upon. It is hoped that this report will lead to the consolidation of community support and government acceptance at all levels.

Volume II { Volume II will provide backup and analytical data, outlining in depth the recommendations presented in Volume I. As well, an extensive record of research material, reports and related data will be deposited with the Hamilton and Halton Region Conservation Authorities.

May we take this opportunity to express our thanks to the many agencies, committees and individuals involved, for their support and assistance, and to the Halton-Wentworth Conservation Authority for the opportunity to carry out this landmark study.

Yours very truly,

P.E. Wade, P.Eng.
Study Director

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The consultants wish to acknowledge the guidance given by the two local committees established to co-ordinate and give technical assistance to the project.

The Co-ordinating
Committee

B. Humphreys, Halton Region Conservation Authority,
Chairman of the Co-ordinating Committee

W. Powell, Hamilton Region Conservation Authority,
Co-Chairman of the Co-ordinating Committee

A. Latornell, Ministry of Natural Resources

R. Gardiner, West Flamborough Township ✓

R. Morrow, City of Hamilton ✓

R. New, Town of Oakville

L. Preston, Town of Burlington

D. Smith, Saltfleet Township

J. Washington, Town of Dundas ✓

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M. Stephen, Halton Region Conservation Authority,
Co-Chairman of the Technical Committee

J. Anderson, Ministry of Natural Resources

V. Rudik, Ministry of the Environment

J. McMurray, Ministry of the Environment

S. Radbone, Ministry of Transportation & Communications

D. Howell, Ministry of Natural Resources

L. Laking, Royal Botanical Gardens

P. Morris, Town of Dundas

R. Cripps, Town of Oakville

R. Roberts, Town of Burlington

R. Bailey, City of Hamilton ✓

H. Weinberg, City of Hamilton ✓

J. Smith, Township of West Flamborough

H. Gaasenbeek, County of Wentworth

R. Ventrcek, Township of Saltfleet

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PREFACE

This report presents planning guidelines for future use and management of land and water areas along the shores of the Regional Municipality of Halton and the Regional Municipality of Hamilton-Wentworth. It covers a Study Area of about sixty miles of shoreline, including land areas extending about a quarter of a mile inland, and water areas extending about three miles off shore. Where special features of the land, such as river valleys, are of particular importance to future development of the waterfront, land areas more than a quarter of a mile from the shore have been included in the research and analysis.

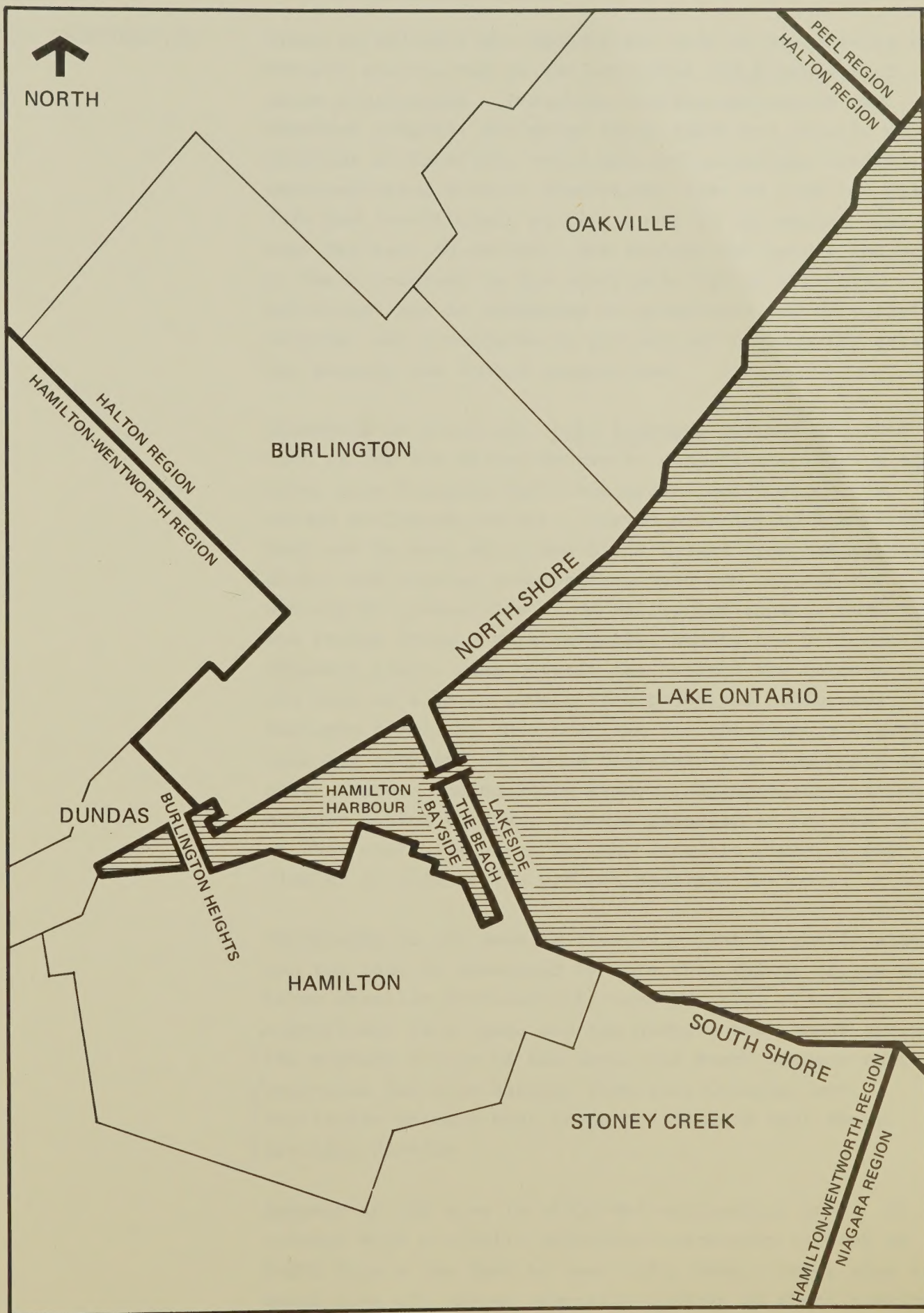
The study was jointly commissioned in the summer of 1972 by the Halton Region Conservation Authority, the Hamilton Region Conservation Authority and the Conservation Authorities Branch of the Ministry of Natural Resources of the Province of Ontario. A consulting team of specialists in natural sciences, transportation, urban and regional planning, social sciences, landscape architecture, architecture and marine engineering carried out the research, analysis and plan formulation in consultation with a nine-man Co-ordinating Committee and a fourteen-man Technical Advisory Committee representing various agencies and government bodies that would be affected by the plan.

An extensive public participation program was carried out as an integral part of the research and plan formulation stages. Interviews, study sessions and public meetings were held throughout the area during the first ten months of the work. At nine public meetings held in the summer of 1973, preliminary concepts were reviewed. Comments and opinions expressed at these meetings were then incorporated, where possible, into the plans and into the recommendations for implementation. Since the summer of 1973, proposals have been continuously adjusted and refined in study sessions among the consultants, the Co-ordinating Committee and the Technical Advisory Committee.

The products of this work are: two reports that cover all subjects in detail; a brief summary report that contains the principal findings and recommendations of the consultants (it appears as Chapter 2 of the main report); and a Data Bank. The Data Bank contains several hundred pieces of research data, background information, detailed concept plans, and research reports that will assist those who will follow-up on the recommendations in this report. Each item in the Data Bank has been catalogued by subject and by geographic area (units 1 to 38, Map 2) to assist future workers in finding data quickly.

To arrive at the final recommendations, many alternative solutions were explored and jointly examined at length by study groups, usually comprised of Technical Advisory Committee members and members of the consultants' team. Information on these discussions and an analysis of development alternatives for each part of the study area have been included in the Data Bank.

The proposals we have made are conceptual. They are intended as guidelines for the preparation of more detailed plans that must eventually be prepared to solve specific problems on specific sites. Nevertheless, wherever possible we have made some specific recommendations on such matters as multiple housing locations and road locations that are known to be of particular public concern.



CHAPTER 1: INTRODUCTION

Urban waterfronts are subject not only to the attacks of natural erosion but to the conflicts and pressures of urban development. Industry, housing, recreation and commerce compete for prime shore space and usually cause problems of landfill, water and air pollution, traffic, unco-ordinated erosion protection, loss of fish and wild-life and insufficient public access to the shore. Our task has been to identify and analyse the nature and scale of these problems on the sixty-mile Halton Wentworth waterfront and to recommend an integrated set of policies, programs and procedures to protect and enhance the area for present and future populations.

Thousands of years ago, Lake Iroquois covered the land that is now the Halton-Wentworth waterfront. During its life, Lake Iroquois built the gravel bar that is now called Burlington Heights, carved a series of low bluffs that can be seen about two miles inland from the present shore, and created wide beaches that now contain the waterfront communities of Oakville, Burlington, Hamilton and Stoney Creek. More recently, during the past ten thousand years, Lake Ontario has created new beaches and bars at a lower level. The principal sculptural features formed by this new lake are the Beach, a six-mile sand bar composed of eroded materials from the north and south shores, and Hamilton Harbour, an excellent natural harbour behind the bar. Cootes Paradise is the remnant of what must have been, in Lake Iroquois times, a bay similar in size to the present Hamilton Harbour.

Topography in the area is generally flat to gently sloping and the land is dissected by more than thirty creeks and storm channels draining into Lake Ontario. The most significant land forms are the Niagara escarpment around the western fringe of the area; the Beach isthmus that separates Hamilton Harbour from Lake Ontario, and Burlington Heights that rises one hundred feet above Hamilton Harbour.

Bedrock in the area is shale and sedimentary rock. It is covered with glacially deposited overburden varying in depth from a few feet to over fifty feet. Other than the Beach area the shores generally consist of short sections

of gravel beach and low cliffs that are susceptible to erosion.

The shores are used mainly for residential purposes. In Oakville and Burlington, expensive homes and large estates are the predominant use. The Beach, formerly an area of summer homes, is now used for year-round living in an environment that is seriously affected by air and water pollution, traffic noise and lack of sewers. The Stoney Creek shore is sparsely developed with cottages and residences that generally line the water's edge.

Industrial development, mainly steel manufacturing, dominates the south shore of the Hamilton Harbour and almost blocks the central part of Hamilton from the waterfront.

West of Burlington Heights is Cootes Paradise, a superb publicly owned marsh and woodland that provides more than 1,000 acres of natural recreation areas and wildlife habitats.

The population within a quarter of a mile of the waterfront is about 100,000. An additional 500,000 people live further inland, and are concentrated in Oakville, Burlington and Hamilton. It is expected that this population will approximately double during the next twenty years and that open areas in Stoney Creek will be converted from agricultural to community and industrial uses.

A critical focus of the study has been on the scale and nature of the demand for use of the waterfront. Our findings reveal that future demand for industrial waterfront will be insignificant, except for the continuing needs of the steel industries in Hamilton Harbour. Generally speaking, they have recognized the limited capacity of the Harbour for industrial expansion and are developing plans for long range expansion elsewhere. The major land use conflicts are among low density residential uses, high density residential uses, public access to the shore, recreational uses of the shore, and the expansion of transportation and port facilities.

On the north shore, there is pressure to use residential estates for high density residential purposes, for low-density residential uses, and for increased public access to the waterfront. Policies are urgently needed that will put these conflicting pressures into an acceptable balance.

On the south shore there is considerable 'undeveloped' land under consideration for redevelopment as multiple housing. If approvals are given, strict policies and controls will be needed to ensure that there will be suitable public access to the shore, sufficient recreation opportunities on the waterfront, and buildings that will be valued additions to the appearance of the waterfront.

Both the north and south shores are eroding rapidly. Problems have been particularly serious on the south shore during recent high lake levels. Only under an overall shore protection plan for the entire area can erosion protection and beach building programs be successful.

Most of the streams in the area have good potential for being preserved as environmental assets and for minimizing flooding, but better policies and control measures are needed to halt unnecessary pollution, siltation and encroachment by development.

Conflicts in Hamilton Harbour regarding priorities for shipping, port expansion, water quality, landfill, air quality, highway rights of way, railway expansion, recreation and aesthetics have raised serious concerns about the future of the Harbour. Policies are needed on how much landfill should be permitted, where, and under what conditions. The Harbour is a retaining basin for inadequately treated sewage effluents from community and industrial sources and improved water quality policies and controls are urgently required to restore the potentials of the Harbour for aquatic life and recreational uses.

The Beach is one of the finest sand beaches on Lake Ontario. It is on the annual travel route for millions

of local and long distance travellers and it is as an important link in the provincial power transmission system. Nine hundred families now reside on the Beach in houses that were mainly intended as summer cottages and that are not served by municipal sewers. In periods of high lake levels there is serious flooding and septic tanks fail. Recent proposals by the Ontario Ministry of Transportation and Communications to increase the capacity of the Queen Elizabeth Way on the Beach have long-term implications for the future of the Beach area. Some housing will probably have to be acquired and there will be an opportunity to relocate aerial transmission lines into underground conduits. These changes could stimulate redevelopment of the entire Beach area as a recreational resource of international importance, but such developments can be successful only if air and water pollution emanating from the Harbour is substantially reduced.

Planning Objectives

Throughout the study the attitudes, opinions and goals of the general public and of the industrial and commercial communities were gathered and discussed. Meetings, interviews, group sessions, questionnaires, and public reviews of plans were used to assist the consultants in formulating planning objectives for the waterfront. Some basic social and economic differences became apparent in these discussions, and local attitudes were markedly different. There was, however, a high degree of unanimity among all community groups, major corporations, commercial enterprises and waterfront property owners that the waterfront is a precious resource that must be protected from destruction and excessive development. We were told repeatedly that:

- there should be better public access to the shore, both physically and visually;
- that high buildings and industries are not appropriate uses for the shore, but that the industrial development in Hamilton Harbour must nevertheless be protected as an important base for employment and the regional economy;
- that parks, walkways, open areas and marinas should be more plentiful on the waterfront;
- that the waterfront should be protected from erosion and pollution and that creeks and valleys should be preserved in a natural state.

These opinions are essential components of the general planning objectives for the waterfront that have been developed by the consultants. They are:

- To maintain the basic existing land use pattern, but at the same time to substantially increase the amount of well distributed public open space; to increase the amount of waterfront housing; and to confine multiple residential development to a few selected locations.
- To increase the amount of public shoreline from the present 20 per cent to at least 40 per cent in the near future; and in the long term to secure public access to the entire shore. }
- To increase the amount of public open space and provide for a wide variety of recreation opportunities on land and water. To provide well-spaced parks for local, community, regional and provincial scale use. To provide a system of safely spaced recreational harbours and boat launching areas. To provide land and water tour-routes and traveller attractions together with information and interpretive centers.
- To protect historic, architectural, landscape, and geological features and incorporate them into public areas or points of interest for local and export tourism.
- To prevent further loss of public and private shoreline by protecting the shore in an integrated manner under an overall shore protection plan.
- To improve the water quality in all natural water bodies and streams to ensure that future populations will enjoy healthful water supplies, swimming, boating, and plentiful fish and wildlife and an enriching urban environment.
- To improve air quality, particularly downwind from harbour industries, so that the natural recreational potentials of the Beach and the south shore can once again be fully enjoyed.

- To preserve stream valleys as an important environmental resource. To maintain wide natural valleys that minimize the need for bank stabilization and changes in stream alignment, and that form integral parts of community open space systems.
- To preserve and enhance fish and wildlife resources by protecting selected habitats, and to provide educational and recreational opportunities related to these resources.
- To achieve water quality and water use standards in Hamilton Harbour that bring the highest possible aesthetic, environmental, recreational and economic benefits to the area.
- To redevelop the Beach mainly for public recreation purposes on the Lakeside and for transportation and utility purposes on the Bayside.
- To establish planning and design controls for residential and commercial development on the shore that ensure:
 - a maximum of public shore;
 - public access to the shore;
 - clear views of the lake from inland locations;
 - a minimum of shore erosion;
 - public participation in shore development;
 - a high quality of design for buildings and grounds.
- To allow for a transportation network of expressways, railways and tour routes in the waterfront area that take into account environmental, recreational, economic and commuter needs.
- To preserve and improve the industrial and port areas in the Harbour as essential components of the economic base of the region.

On the basis of these objectives an integrated set of specific planning proposals and implementation procedures have been prepared for: shore protection, air and water pollution control, stream valley protection, fish and wildlife preservation, land use and housing, parks and waterfront

access, development of recreational harbours, touring, scenic routes, preservation of places of historic and architectural importance, redevelopment of the Beach, and for balancing conflicting demands for land and water in the Hamilton Harbour area. A number of our recommendations are summarized in the following sections.

Waterfront Parks System

We have proposed a waterfront parks system that doubles the existing amount of public shore. Almost 100 small parks, primarily for local pedestrian use, would be spaced along the entire shore within easy walking distance of most residents of waterfront neighbourhoods. Eleven community parks are proposed for a wider variety of uses by people who come to the shore by car or bus. And five regional-scale parks, spaced at about six-mile intervals, are proposed for such uses as recreational harbours, golf, riding, hiking, cross-country skiing and other activities that require large land areas. The Beach area would be redeveloped as one of these regional parks. It would include a variety of public and commercial recreation opportunities for tourists as well as for people from the region. Associated with the parks we have recommended that historical, architectural and landscape features be incorporated into a tour-route and scenic route system with strategically placed information/interpretive centres.

One of the greatest potentials of the area is for boating, and we have recommended the development of eleven recreational harbours to meet demands for an estimated seven-fold expansion in boating.

Shore Protection Plan

We have prepared design criteria for locations that are in the most urgent need of protection. And, we have recommended that all shore protection works be carried out within the context of an overall Shore Protection Plan that is based on detailed engineering studies of each section of the shore.

Beach Redevelopment

We have recommended that the Beach area be redeveloped as a major recreational area of regional and provincial importance. We have endorsed the reconstruction of the Queen Elizabeth Way as a tunnel under the Burlington Canal and have recommended the removal of housing, the removal of the CNR railway on the Beach and the relocation

of hydro transmission lines into underground conduits. And, because of its strategic location at the focal point of the area we have proposed that a major interpretive centre be established near the canal to provide information about the region and about environmental change and control techniques.

Hamilton Harbour

Landfill, water quality, land use and water use in the Harbour are parts of overall planning problems of regional importance. We have therefore proposed the formulation of a special inter-regional Joint Committee on Landfill and Water Quality comprised of representatives of the Halton Region and Hamilton-Wentworth Region. We have prepared guidelines and criteria for this committee and we have pointed out that developing a policy framework for solving current Harbour problems, is an integral part of preparing regional official plans that must be completed by December 1976.

We have recommended that, in general, further landfilling in the Harbour should not be permitted, but we have identified special areas where filling or construction on piles would be appropriate. For example, we have proposed a major redevelopment and expansion of water-oriented recreation facilities at the west end of the Harbour to provide central Hamilton with a significant connection to the waterfront. And we have recommended that an area be set aside for port expansion on landfill or piles at piers 11, 12, and 13, if suitable alternative expansion areas cannot be found south or west of the present docking areas.

Conservation and Environmental Protection

Our recommendations for the improvement of air and water quality are closely related to our recommendations for the protection of fish and wildlife habitats and the preservation of streams and stream valleys. We have proposed the phasing out of small sewage treatment plants, the expansion of existing larger plants and the introduction of tertiary treatment.

We have recommended that nine locations be designated as fish and wildlife protection areas, and we have prepared criteria on which a Stream Valley Protection Plan can be based.

Housing and Subdivision of Land

To allow for a variety of housing on the waterfront, yet keep the shore from being blocked by tall buildings, we have proposed that multiple housing be restricted to eight waterfront locations. We have recommended development controls for new housing areas that provide for shore set-backs depending on building height, for strict design controls to protect the long term character of the waterfront, and for public access and park development to which developers would contribute. We have emphasized that in redeveloping the north shore estates and south shore agricultural land, the public has an outstanding opportunity to obtain waterfront in public ownership; and that if the opportunity is missed now, it may never recur.

Costs and Implementation

An expenditure of about two hundred and twenty-four million dollars will be required to protect the shore, acquire recommended public open space, provide basic landscaping, clear the majority of buildings from the Beach, develop harbours for recreational boating, develop tour-routes and information centres, construct a major interpretive and information centre on the Beach, and to relocate aerial hydro transmission lines on the Beach into underground conduits.

We do not believe that any single government or agency can carry out all the projects we have recommended. Several levels of government, special agencies and private enterprises will have to play roles in implementing the proposals. Most of the projects will require policy formulation and co-ordination at a regional level and we believe that the Conservation Authorities and the Regional Municipalities are best equipped to give the necessary leadership. We have proposed that the Conservation Authorities immediately assume a number of regional tasks that are of particularly high priority. Within a year or two, we expect it will become apparent to what extent these functions should be shared by the Regions and the Conservation Authorities.

Our principal findings and recommendations on each waterfront issue have been summarized in the next chapter. The balance of the report is devoted to a more detailed

consideration of each of the principal issues in the Halton-Wentworth Waterfront area.

Throughout the report, numbers have been used that refer to specific map locations. For example, 0.44 is in Oakville at location 44 on Map 2; it is also shown at location 44 on Unit Map 6.

CHAPTER 2: SUMMARY

The main purpose of the Halton-Wentworth Study has been to develop planning guidelines for future development of the waterfront from the Oakville-Mississauga boundary through Burlington, Dundas, Hamilton and Stoney Creek to the boundary with the Niagara Region at Fifty Mile Point. The study area includes: about sixty miles of shore, the land within about a quarter of a mile from the shore, and water areas extending up to three miles off shore.

During almost two years of research, public meetings and study sessions with government representatives, with industry and special interest groups, it became evident that a single plan could not cover all the pressing issues and concerns in the area. What was needed was a set of interrelated plans covering a variety of subjects. We have therefore prepared planning guidelines and implementation recommendations for each of the thirteen principal issues identified during the study. They are:

- Shore Protection
- Water Quality
- Air Quality
- Stream Valley Protection
- Fish and Wildlife
- Land Use
- Estates, Housing and Subdivisions
- Parks and Waterfront Access
- Recreational Harbours
- Touring and Points of Interest
- The Beach
- Hamilton Harbour
- Transportation Facilities

The following sections summarize each problem and give the main recommendations of the consultants on planning policy, specific projects, implementation techniques and costs.

Shore Protection

Lake Ontario shoreland is being rapidly eroded, particularly in Stoney Creek, where high water levels in 1973 contributed to unusual losses of more than nine feet of shoreland near Millen Road. About nineteen miles of shore are in urgent need of protection work at

ten locations on the north shore and six locations on the south shore. In general, these locations are along bluff areas where there is little or no beach to dissipate the destructive power of waves.

Almost all of the problem areas are privately owned and protection attempts by individual owners have not only been generally inadequate for their own properties, but have frequently caused damage to nearby properties because of resultant changes in wave action. Any plan for effective erosion control must be undertaken on an overall basis for the entire shoreline, not only to avoid undesirable local side-effects, but to gain the best possible results in terms of beach building and creating waterfront recreation areas.

We therefore recommend that an overall Shore Protection Plan for the entire waterfront be prepared immediately including design details, cost estimates, priorities and techniques of allocating costs. In the meantime, any works that are constructed, should provide protection between a design minimum water level of 241.5 feet (International Great Lakes Datum) and an upper level of 260.0 feet (I.G.L.D.)

{ The estimated cost of satisfactorily protecting the
nineteen miles of shore within an overall plan is \$44
million.

At present, there is no public or private agency with a mandate to plan or construct shore works in a co-ordinated manner. Such a responsibility is clearly of regional scale and we recommend that the Conservation Authorities jointly undertake the preparation of the Shore Protection Plan for the entire Study Area. They should carry out or co-ordinate construction works until the Regional Municipalities are in a position to take over shore protection tasks with support from the Conservation Authorities, Area Municipalities and the senior governments.

The Shore Protection Plan should be developed co-operatively, with participation by appropriate federal, provincial and local agencies, and private owners. Costs of construction should be borne mainly by public authorities, but private shorefront owners should pay a special tax levy related to the increased value of their lands because of protection works.

Public promenades and recreation areas should, wherever possible, be part of the design of protection works and private owners should be encouraged to incorporate public access into shoreworks in front of private property. Islands or island-promontories should be used for shore protection at park locations, for creating new or enlarged harbours for recreational boating, and for creating protected areas for swimming, skating and wild-life resting or feeding sites.

Water Quality

Water pollution due to inadequate sewage treatment and siltation has seriously reduced the potentials of the area for swimming, boating, and fishing. Because of the effects of poor water quality on food chains and on aquatic life, water pollution has produced a number of unattractive water areas and reduced the capability of water bodies to support wildlife.

The most seriously affected locations are: Cootes Paradise which receives sewage effluent from the Dundas Sewage Treatment Plant; Hamilton Harbour which receives effluent from Hamilton, Dundas, Burlington and the industries on the south shore of the Harbour; and the north shore of Lake Ontario which receives effluent from treatment plants in Burlington and Oakville as well as poor quality water which is carried north-eastward from Hamilton Harbour by prevailing winds and currents.

Water quality on the south shore is generally suitable for swimming because of good water quality and water temperatures that are usually about 7 degrees Fahrenheit above the north shore. ✓

The quality of water in Hamilton Harbour is affected by landfill, not only because of the danger of pollution

from landfill materials, but because any reduction in the volume or surface area of Harbour water reduces the capability of the water to recover, by natural processes, from the sewage effluent that is flowing into it. Strict controls are therefore required over landfill and the quality of effluents from treatment plants and industries.

We therefore recommend:

- That small, local sewage treatment plants be phased out and treatment centralized at large modern facilities where tertiary treatment can be efficiently provided.
 - { The Skyway Plant in Burlington, the Hamilton Sewage Treatment Plant and the Oakville Plant near Coronation Park should be continuously improved as the principal plants in the area.
- A study should be undertaken to determine the feasibility of directing Dundas sewage to the Hamilton Plant, thus protecting the future of Cootes Paradise area.
- A regional analysis is required to determine the eventual needs for sewage treatment in Stoney Creek and the long term functions of a proposed treatment plant at Fifty Point Conservation Area.
- Applications for future filling in Hamilton Harbour should be submitted to a Joint Committee on Landfill and Water Quality in Hamilton Harbour comprised of representatives of the Halton and Hamilton-Wentworth Regional Municipalities. Until this committee is formed, the Hamilton Conservation Authority and the Harbour Commissioners in consultation with all affected local government agencies should continue to decide on applications for fill. If agreement cannot be reached, the application should be referred to the Province of Ontario for a decision.
- To ensure that each municipality and Conservation Authority will have control over shores and waters that directly affect future development and environmental quality in their land areas, the regional boundary in Hamilton Harbour should be moved from the north shore to the centre of the Harbour (Map 2).
- The steel industries should continue their present aggressive approach to improving the quality of industrial waste water. Current programs are being developed in cooperation with the Ministry of the Environment and are based on the best existing technology for handling industrial wastes.

Air Quality

The poorest air quality in the area exists near the Hamilton Harbour industrial zone. Other than the industrial zone itself, the waterfront area most seriously affected is the Beach near the former toll booth. Both industrial and motor vehicle emissions contribute to poor air quality in this location.

The Ontario Air Management Branch has recently approved plans by the steel companies for additional air quality control processes that will be in operation by 1975. The industries will invest several million dollars in these efforts to improve air quality, and the schedule that has been accepted for implementation is the shortest that is technically feasible. However, it is unlikely that the resulting air quality will be satisfactory for intense use of the Beach without additional measures.

Continued pressure should be brought to bear on industries who are major contributors to this pollution, to utilize all available technology which could reduce emissions to acceptable levels. To achieve this objective, the Air Management Branch of the Ontario Ministry of the Environment should continue discussions with harbour industries to establish procedures for reducing emissions of hydrogen sulphide from slag cooling, and for reducing dust from material stockpiles.

Until air quality conditions are improved in the Beach area, only low intensity uses should be planned for, especially near the most heavily polluted area near the former toll booth.

We endorse the proposals of the Ministry of Transport and Communications to reconstruct the Queen Elizabeth Way as a tunnel under the Burlington Canal as the best alternative for minimizing air and noise pollution on the Beach.

In working towards improved air quality on the North Shore, short term monitoring of air pollutants should be commenced by installing an ambient air quality station in the vicinity of the Oakville Oil refineries.

Stream Valley Protection

✓ There are twenty-one major creeks in the area, seventeen of which are on the north shore.

Each stream and stream valley is an irreplaceable environmental resource. Whenever feasible, streams

should be maintained in a natural state, and included as vital components of community plans and community open space networks. Each valley should be maintained in a green state with grass, trees, shrubs and gardens to reduce the volume of flash runoff after a rain. If the green area is wide enough it will be unnecessary to damage valleys with unsightly channelization techniques.

Undesireable filling of streams valleys, apparently by private individuals, is occurring on Redhill Creek and Bronte Creek, and urban development and transportation facilities have been permitted too close to other streams. Chedoke Creek, Spencer Creek and Rambo Creek are examples of streams that have been essentially lost as environmental assets. The process of attrition is continuing throughout the area, but there are fifteen streams remaining with good potential for being preserved in a relatively natural state. If suitable development controls are immediately imposed, parts of the following streams and valleys can be preserved:

Joshua's	Appleby
Wedgewood	Shoreacres
Morrison	Tuck
Sixteen Mile	Falcon
Taplow	Grindstone
Fourteen Mile	Stoney Creek
Twelve Mile	50 Mile
Sheldon	

The Conservation Authorities, through flood control powers, and the Area Municipalities through planning, zoning and park development, now have some control over stream valleys. However, we believe that stream valleys can play such an important role in shaping the quality of urban life, that policies and programs for their protection and enhancement must be established at a regional level as part of the overall planning process. The Conservation Authorities should immediately undertake the preparation of a Stream Valley Protection Plan that classifies each stream as to desirable future functions. The Plan should set out development control policies for each stream including uses of valley and table land and set-backs for buildings. Policies that are developed by the Plan should be adopted as soon

as possible by the Regional and Area Municipalities and incorporated into Official Plans and development control practices. ✓

Wherever possible, existing undeveloped parts of stream valleys and strategic table land should be acquired in public ownership.

Fish and Wildlife

Fish and wildlife resources in the area include : some trout and pike where conditions are favourable; coarse fish, such as carp in lower quality waters; small mammals in ravines and woodlots; a few deer and fox in larger protected areas; numerous species of song birds; and waterfowl. The area is on a major flyway for Canada Geese, Whistling Swans and other migrating birds.

These animals are not only important elements in the world biological system, but are locally valuable as educational and recreational resources. The deterioration of their habitats through air and water pollution, sedimentation of marsh areas, removal of woodlands, and human intrusion could result in a serious environmental loss to the Halton-Wentworth area.

To protect these resources, nine areas should be designated as fish and wildlife habitats (Fig. 9):

1. Sixteen Mile Creek and Ravine (Oakville Creek)
2. Twelve Mile Creek and Ravine (Bronte Creek)
3. Grindstone Creek and Marsh
4. Hamilton Harbour
5. Cootes Paradise
6. Redhill Creek Marsh
7. Stoney Creek Ravine
8. Fifty Point Ponds
9. Lake Ontario shore

Four of the areas should be designated as sport fishing areas and current provincial stocking programs should be expanded to include all four areas:

1. Sixteen Mile Creek (Oakville Creek)
2. Twelve Mile Creek (Bronte Creek)
3. Grindstone Creek
4. Lake Ontario Shore

Access to sport fishing areas should be improved by providing additional boat launching ramps, waterfront access parks, pedestrian access trails and docks, and facilities for boat and equipment rental.

Four areas should be designated as reserves for birds and land animals where restrictions would be placed on noise and human intrusion:

1. Cootes Paradise
2. Redhill Creek Marsh
3. Grindstone Creek Marsh
4. Bronte Creek Marsh

The Conservation Authorities should jointly co-ordinate policy formulation with regard to designation, classification and management of fish and wildlife resources for the 9 designated areas. They should be supported in this function by the Ontario Ministry of the Environment, the Ministry of Natural Resources, the Regional and Area Municipalities and the Royal Botanical Gardens.

Management of the individual areas will vary depending on whose jurisdiction the area is in and the nature of the program being developed. But all programs should be operated within overall policies that are developed through the co-ordinated efforts of the Conservation Authorities.

Land Use

The basic land use pattern of the area includes: relatively continuous residential development along the north shore and the Beach; intermittent cottages, low density housing and agricultural areas on the south shore; a major industrial area on the south shore of the Harbour and major open spaces areas around Cootes Paradise and along Burlington Heights. Multiple density housing (apartments and row houses) is generally confined to central parts of Oakville, Bronte, Burlington,

Dundas and Elizabeth Gardens (Unit 8, Map 2).

The principal weaknesses of this pattern are the lack of well distributed open space; inefficient use of the Beach, whose unique recreation potentials have been displaced by housing of depreciating quality; and encroachment on the recreational and aesthetic capabilities of the Harbour by expanding port and industrial uses.

In arriving at a recommended pattern for future development (Map 1) we have recognized the following principles:

- the Harbour industries and Port of Hamilton are essential to the economic health of the region and they must be suitably accommodated in their present strategic location in the Harbour;
- an open space system is required that protects and enhances the valleys, woodlands, shore and beach areas; that gives improved public access to these areas; that connects with the proposed Provincial Parkway Belt system and helps delineate communities;
- although there is public resistance to permitting multiple housing anywhere on the shore, we believe that well-designed apartments and multiple housing in selected shore-front location are a desirable form of development. They can provide not only a variety of housing with outstanding locational attraction, but they can be striking physical features that integrate the landscape and sculptural qualities of the waterfront.

Map 1, Goals Plan, illustrates how these planning objectives can be included in future plans for the area.

The communities are separated by regional parkway belts that follow major stream valleys, the escarpment and certain expressways. The parkway belts connect to the shore at approximately six-mile intervals and create, at the shore, five regional parks:

Fifty Point, The Beach/Confederation Park, Cootes Paradise, Bronte Harbour/Sheldon Creek Park, and Joshua's Creek Park.

Between each regional park, community parks and local waterfront parks are evenly distributed to provide convenient shore access by foot or vehicle.

Recreational Harbours are located at about five mile intervals to provide for safe convenient boating.

Multiple Housing is generally confined to waterfront locations where multiple housing already exists, where there is good access to arterial roads and expressways, and good access to existing or proposed community facilities and recreation opportunities. The largest proposed multiple housing areas are in Stoney Creek where some approvals have been given for multiple housing developments and where there is considerable open land suitable for housing.

Expansion of the port and industrial areas in Hamilton Harbour is confined to specific limits, described below under Hamilton Harbour.

We recommend that these general planning guidelines be incorporated into the regional official plans that will be prepared by the Regional Municipalities during 1975 and 1976. (More specific applications of these guidelines are shown on Map 2 and described in more detail in following sections of this report).

Estates, Housing and Subdivisions

Estates on the north shore and the relatively undeveloped waterfront lands in Stoney Creek are the principal sources of space for future waterfront housing. After future needs for open space and waterfront cultural and recreation facilities have been allowed for, approvals should be granted to redevelop these areas for housing. When these lands are redeveloped, re-zoned or subdivided, there will be an opportunity to regain into public ownership, at no capital cost, segments of the shore than can eventually be joined into an almost continuous public shore. All subdivision design and site planning

for residential areas should therefore lead, in the long term, to establishing a relatively continuous public waterfront supported by an integrated system of access trails and footpaths.

Multiple housing should be confined to eight general locations (Map 2) where multiple housing already exists or is committed, where there is good road access, and where there is (or will be) good access to recreation and community facilities.

Stringent design controls should be maintained on all site plans, building designs and landscaping to ensure that waterfront development will enrich the lives of all residents and visitors. In each new development, at least fifty feet of shore should be dedicated to the public along the entire frontage of the property. No residential or commercial building should be permitted within 100 feet of the high water mark and buildings higher than ten storeys should be set further back.

Because of the critical importance of the north shore estates to future development, a municipal program of estate appraisal should be carried out to determine the best future use of each property. Our land use recommendations, Map 2, indicate which lands are required for recreation purposes. The estates marked as having "redevelopment potential" should be carefully assessed with respect to future requirements for housing or special recreational purposes.

Major developments of multiple housing are proposed in Stoney Creek (Map 2). These areas should be water-oriented communities containing ponds, canals and lagoons connected to the lake. Each area should comprise one or more neighbourhoods with schools and local shops.

The Official Plans of the Regional Municipalities, which are to be completed by December 1976, should incorporate the foregoing recommendations on land use and density. Zoning by-laws and subdivision and development regulations, which are Area Municipality responsibilities, should be amended as soon as possible to incorporate our more detailed recommendations for controlling waterfront development.

A number of subdivision plans have recently been approved in Oakville and Stoney Creek that have not provided adequately for public access to the shore. In these cases, an opportunity has been lost that will probably never recur. It can hardly be overstated that the estates in Oakville and Burlington and the sparsely developed lands in Stoney Creek provide the best available opportunity for obtaining new public shore. Policies should be established immediately at provincial, regional and local levels to ensure that this opportunity is fully utilized.

Parks and Waterfront Access

There is a serious shortage of opportunities for people to enjoy the Halton-Wentworth waterfront. Housing developments have, over the years, effectively shut-off the shore to all but those who live on it. Only about 20% of the shore is publicly accessible now, and that consists mainly of waterfront in Cootes Paradise, at four large parks and at about 40 street ends (where the public right-of-way meets the shore).

By carefully integrating programs of parkland acquisition, shore protection, stream valley protection, housing and industrial redevelopment, the amount of public shore can, within perhaps 20 years, be increased from about 11 miles to almost 26 miles. In addition, island-promontories constructed as part of a recreational harbours program could add another four or five miles of publicly accessible shore.

To provide for a variety of waterfront recreation opportunities for local, community and regional visitors we recommend that local waterfront access be provided at least every half a mile in the form of: Street-End Parks, Creek Mouth Parks, Creek Trails and Promenades. These parks should be designed to serve mainly pedestrian access to the shore from neighbourhoods within ten minutes walk of the shore.

Larger waterfront parks of community and regional scale should be spaced at about three-mile intervals to provide for visitors by car or transit. These larger parks should be designed to serve local pedestrian access to the shore as well as travellers by car, transit or boat.

The lakeside of the Beach is a unique natural feature on the waterfront and should be specially planned as a park of provincial scale. Planning policies for the Beach are described below under "The Beach".

On the basis of our planning criteria for parks and waterfront access, we recommend the acquisition or designation of the following new waterfront park areas: (within the quarter-mile Study Area)

- 47 street-end parks
- 11 creek mouth parks
- 5,450 feet of creek trail
- 56,800 feet (10.8 miles) of promenade
- 215 acres of community park
- 1,008 acres of regional park

Acquisition costs for street-end parks and promenades will be negligible because the proposed street-end locations are now municipally owned, and most of the new promenade areas should be dedicated to the municipality through development agreements when shore-land is redeveloped or subdivided. The acquisition and basic landscaping of other needed lands will cost about \$120 million of which \$54 million will be needed for the Beach Area.

Because of the unique nature of the Beach area as a resource of provincial importance, it is proposed that the Province and the Regional Municipalities play the principal implementing roles in acquiring and clearing land and carrying out basic landscaping.

In the immediate future, areas other than the Beach should, in the main, be acquired and cleared by the Conservation Authorities and developed and managed by the Area Municipalities and Regional Municipalities. The major costs will be for acquisition and clearance and will amount to about \$20 million for the Halton Conservation Authority and \$45 million for the Hamilton Region Conservation Authority.

As the Regional Municipalities become established, we

recommend that they form parks authorities and gradually assume policy-making and management responsibilities for regional-scale parks and recreation areas.

Recreational Harbours

Perhaps the greatest natural recreational potential in the area is for boating. There are however, only about 800 existing boat slips in the three harbours at Oakville, Bronte and Hamilton. Twice as many slips could probably be leased immediately, and we estimate that a total of almost 6,000 slips is a reasonable planning target for the next 15 to 20 years. By the year 1990, a chain of eleven marinas, spaced at safe boating distances of about five miles, should be developed to accommodate this estimated demand (Map 2). By anchoring the system on a harbour at Joshua's Creek and one at Fifty Point there would be a ninety-mile chain of recreational harbours, safely spaced, from Grimsby to Ajax.

Most of the new facilities will have to be constructed out into the lake because the natural harbour areas within creek mouths are essentially fully developed. Extensive breakwater construction will therefore be required to create the recommended new harbour space. Wherever possible, harbour breakwaters should be constructed in the form of islands or landscaped promontories that are accessible on foot from the mainland. Feasibility studies on island development should be carried out for the Joshua's Creek, Oakville, Bronte, Shoreacres, Spencer Smith, Confederation Park and Fifty Point locations (Map 2).

For the boater who brings his boat to the shore by trailer, launching ramps should be constructed at three to five mile intervals and located in the recreational harbours and in intervening community or regional parks.

The estimated total cost of new breakwaters, berths, landscaping, servicing and buildings is about \$20 million, over the next 15 to 20 years. This could increase to about \$30 million if island-promontories are constructed in all seven recommended locations.

Each proposed harbour should be an integral part of

the regional system of recreation facilities and should be managed under general policies established by the Regional Municipalities. Until the Regional Municipalities are able to accept these responsibilities the Conservation Authorities should act for them on an interim basis.

Touring and Points of Interest

The geological, landscape, historical, architectural and cultural attractions of the area can be most successfully preserved and enjoyed if they are incorporated into a tour route system. Such a system should be designed to serve not only local recreational travellers who are out for the day, but also travellers who are on extended trips.

Over 140 current and historic points of interest in the area have been catalogued and included in ten "interest clusters" or "nodes" (Figure 10) as follows:

- Oakville
- Bronte
- Burlington City Centre
- Burlington Beach, Canal Area
- Aldershot
- Royal Botanical Gardens
- Burlington Heights
- Hamilton Central Area
- Dundas
- Stoney Creek Village

We have identified seven travel corridors that could connect these nodes, and have selected alternative roads in each corridor that could be designated as tour routes. Because of potential conflicts in the use of selected routes for business purposes as opposed to touring purposes, we recommend that the routes be designated and selectively managed as Scenic Arterial Roads or as Scenic By-ways.

We foresee an increase in demand for water travel, both for business and recreational purposes. We therefore recommend that the recreational harbours in Hamilton Harbour be designed to include eventually, tour boats

and water buses.

Estimated capital costs for land routes and information centres are \$10.7 million of which \$10 million would be for a main provincial interpretive centre on the Beach, and \$700,000 would be local and regional costs for local information centres, signage, landscaping and lay-bys.

The tourism plan should be initiated by the Ontario Ministry of Tourism to ensure that the plan reinforces provincial objectives for Tourism. In consultation with the Regions, Area Municipalities and historical societies, the Ministry should establish general policies on nodes, routes, priorities, and signage.

The main interpretive centre on the Beach should be constructed and managed by the Province. All other interpretive centres, and interpretive programs should be planned, developed and managed by the historical societies with support from the Area Municipalities, Regions and the Province.

Tour routes should be developed and managed by the Area and Regional Municipalities, except for recreational water routes which should be developed by private enterprise.

The Beach

The Hamilton-Burlington Beach is a unique and strategically located feature in the area and should be developed, conserved and enhanced in a manner that best utilizes its natural resource capability and yields the greatest possible benefits to recreation, the economy and the environment.

The principal functions of the Beach should be: to provide major recreation opportunities of regional or provincial interest, to provide a land bridge for important transportation and utility routes, and to protect the Hamilton Harbour. For these reasons we recommend that a long-range development plan be prepared which would include:

- reconstruction of the Queen Elizabeth Way on the bay-

side of the Beach. There should be a tunnel crossing under the Burlington Canal, and the east side of the highway should be bermed and planted along its length to protect future lakeside recreation developments from highway noise;

- relocation of the hydro transmission lines into underground conduits in the right-of-way of the new highway;
- removal of all housing, industries and the CNR line from the Beach;
- development of major public and private recreation areas including facilities for accommodation, entertainment, amusement, active sports, boating, fishing, swimming, viewing, camping and strolling;
- development of an Interpretive Centre of the Environment of the bayside of the Beach in the vicinity of the canal. This centre should be designed with a tower for viewing historical, industrial, environmental and current points of interest.

The estimated total cost of redeveloping the Beach is about \$94 million including property acquisition, clearance, basic landscaping, landfill, relocation of hydro into underground conduits, access roads and construction of the Interpretive Centre of the Environment, but not including reconstruction and tunnelling of the Queen Elizabeth Way, removal of the Burlington Skyway, or construction of recreation facilities.

Direct costs to the Province and the H.E.P.C. will probably amount to about \$39 million for relocation of transmission lines, and Interpretive Centre development. This is in addition to redevelopment of the Queen Elizabeth Way and removal of the Burlington Skyway.

Acquisition of land and buildings, clearance and landscaping on the Beach will amount to about \$54 million, and should be administered by a Beach task force.

However, because of the unique nature of the Beach area and its strategic location on a provincial tour route,

the Province should assume a substantial portion of these costs. For preliminary discussion, we have assumed the shares to be:

Halton Region	\$ 5 million
Hamilton-Wentworth Region	\$ 9 million
Province of Ontario	\$40 million

The development and management of the Beach will be complex and very costly. The area is partly in two Regional Municipalities, in three Area Municipalities, and in two Conservation Authority Regions. Negotiations will involve: The Ministry of Transportation and Communications, the Ontario Hydro-Electric Power Commission, CNR, about 900 home owners, and other private owners, the Canada Centre for Inland Waters, Hamilton Harbour Commissioners, and the Regional and Area Municipalities.

To co-ordinate planning and implementation we believe that an inter-regional special-purpose body will be required. For this purpose a Beach task force (or commission) should be formed immediately. This body should be comprised of elected representatives of the two Regions, the three Area Municipalities and the Province of Ontario. Their tasks should include: planning, negotiations on funding, land acquisition, land clearance, advising on planning and development controls, and public relations. A staff of planners and technicians should be engaged to carry out the day-to-day work of the task force.

As the land becomes available for recreational development, sites should be leased by the task force to private enterprises for the construction and management of selected recreation facilities such as accommodation, restaurants, amusement areas and marinas.

Hamilton Harbour

The recreational and environmental assets of the Harbour are being increasingly threatened by landfilling for port and industrial expansion and by increasing sewage effluents that flow into the Harbour from Dundas, Burlington and Hamilton.

Policies are immediately required that provide for a balance between the competing demands of industry and shipping, recreation, fish and wildlife, aesthetics and the need for disposal areas for community and industrial wastes.

In general, we recommend that these problems be resolved under the leadership of the new Regional Governments working jointly, and in consultation with the City of Hamilton, the City of Burlington, the Conservation Authorities and the Harbour Commissioners. And we recommend that the following proposals be used as guidelines for developing the necessary policies:

Port Expansion: A 100 acre landfill area should be reserved at the head of Piers 11, 12, 13, and 14 for possible future expansion of the port. Approval for landfill should be granted only if it can be clearly established that no reasonable alternative existing land site to the south or west can be found or acquired (Map 2, H20).

Industrial Landfill: Expansion beyond the 1971 headline will not be required for 15 years. By that time firm policies on Harbour filling will have been established. We believe it will be generally accepted at that time that further filling of the Harbour cannot be permitted (H22).

Water Quality: The water quality of the Harbour should be continuously raised by: adding tertiary treatment to the Hamilton and Burlington plants; possibly closing the Dundas plant and delivering Dundas sewage to Hamilton; establishing a 'Wildlife and Recreational Water Quality Zone' on the north and west parts of the Harbour (Map 2); subjecting all landfill applications to review by a Joint Committee on Landfill and Water Quality in Hamilton Harbour. The Joint Committee should be comprised of representatives of the Regional Municipalities of Halton and Wentworth and should develop landfill and water quality policies that will be included in the regional official plans to be prepared prior to December 1976. Until the Joint Committee has been established, the Hamilton Conservation Authority and the Hamilton Harbour

Commissioners should continue to review landfill applications as provided in Provincial regulations, but in consultation with Regional and Area Municipalities.

New Regional Boundary: In order to establish the Regional Municipality of Halton as an equal partner in Harbour decisions affecting the Burlington shore, the regional boundary should be moved from the north shore to the centre of the Harbour (Map 2).

Windermere Basin: A large water volume in Windermere Basin is essential to the rapid purification of sewage effluents that discharge into these waters. No filling should be permitted in Windermere Basin.

Developments on the Bayside of the Beach: A public recreational harbour should be established near the mouth of Indian Creek in conjunction with a private tourist commercial development to the south (B41, 42). The principal information centre in the tour-route system should be established at H36, possibly on fill from the redevelopment of the Queen Elizabeth Way. The Queen Elizabeth Way itself, should be located on the western edge of the Beach isthmus to minimize interference with recommended recreational uses on the Lakeside of the Beach. Landfill at H30, 32, 33 was originally intended for industrial and port expansion, but no industrial or port functions should be permitted on the Beach, and the existing fill should be removed.

Recreational Development in the West End of the Harbour: Waterfront areas between the Harbour Commissioners Docks (H15) and the railway area below Dundurn Castle, provide the only remaining opportunity to secure public waterfront for downtown Hamilton. We recommend the redevelopment of this area as a major water-oriented community recreation area. Boat clubs (public and private), picnic areas, promenades and tour boat facilities should be established in this location. About 1,000 boat slips should eventually be provided. A long range development plan for the area should include the boat club areas, Lax Landfill area, trucking terminal, CNR Railway Yards and should allow for the possible extension of Burlington

Street (H9, 13,14, and 15).

Harbour Tours and Water Transit: Development plans for Harbour parks should include facilities for harbour tours and lake tours and should prepare for probable future water buses as part of the public transit system.

Transportation Facilities

A number of transportation facilities proposals are currently under study by local and provincial authorities. Our comments on these proposals are:

Queen Elizabeth Way on the Beach: We endorse the proposals of the Ministry of Transport and Communications to reconstruct the Queen Elizabeth Way as a tunnel under the Burlington Canal. We believe that the proposed expressway should be constructed along the bayside of the isthmus, partially on fill if necessary, to keep the road as far as possible from the lakeside of the beach, and to minimize air and noise pollution in future recreation areas on the lakeside.

CNR Line on the Beach: The CNR line on the Beach should be removed as soon as possible to permit redevelopment of the lakeside as a major recreation area.

Burlington Street and the CNR Freight Yards in Hamilton: In view of our proposed long-term development of the west end of Hamilton Harbour as a major recreation area; consideration should be given to the eventual relocation of the CNR freight yards.

The proposed westward extension of Burlington Street is also affected by our recommended recreation developments at the west end of the Hamilton Harbour. The selected alignment should bypass possible future recreation development on the CNR yards.

Redhill Creek Expressway: Recommendations by the Hamilton Area Transportation Strategy Study include a Mountain Expressway and a Redhill Creek Expressway as high capacity traffic routes by-passing downtown Hamilton. The construction of an expressway through the Redhill Valley would be a serious incursion into this important

recreational area. We recommend that an alignment further to the east be chosen.

Stoney Creek Interchange: The Ministry of Transportation and Communications is planning a major alteration of the interchange at the Stoney Creek traffic circle. Marshes in this vicinity have a valuable function as waterfowl breeding and nesting areas. Any redesign of the intersection should avoid damage to this environmentally important area.

York Road: A proposed re-alignment of York Road in Dundas, would run near the west end of the Royal Botanical Gardens, cross the Desjardins Canal and Spencer Creek, and travel along the south side of Spencer Creek. We understand that a decision to construct this road has already been made in spite of obvious detrimental impacts on the Royal Botanical Gardens and Spencer Creek. If this road is built, it should be designed as a low-speed scenic road (Scenic By-way) and very careful attention should be given to landscaping and design details.

Lakeshore Road: Lakeshore Road in Oakville and Burlington is an important link in the proposed tour-route system, but at the same time it serves an essential function as an urban arterial road. As population grows, increased demand for tourist and community use will be placed on Lakeshore Road. We recommend that the present scenic character of the road be maintained; that proposals to widen the road or to remove trees be strongly resisted; and that alternative east-west arterial routes be developed further north. New Street and Rebecca Street appear to provide the basis of such an east-west route.

Implementation

The estimated cost of carrying out the recommendations in this report is \$223.7 million as follows:

construction of shore protection	\$44 million
preparation of a Stream Valley Protection Plan	\$50,000
Land acquisition and basic landscaping of local, community and regional parks (except the Beach)	\$66 million
Land acquisition, clearance and basic landscaping of the Beach	\$54 million

Construction of recreational harbours	\$20 million
Development of tour-routes	\$0.7 million
Construction of Centre of the Environment on the Beach	\$10 million
Relocation of hydro transmission lines landfill and servicing on the Beach	<u>\$29 million</u>
	\$223.7 million

We recommend that these costs be shared as follows:

Province	\$ 79 M
Regional Municipalities	\$ 14 M
Halton Conservation Authority	\$ 20 M
Hamilton Conservation Authority	\$ 45 M
Area Municipalities	\$ 16 M
Private	\$ 4 M
Joint (Regional & Area Municipalities)	\$ 0.7 M
Shore Protection Costs to be allocated	\$ 44 M
Other land acquisition, etc.	<u>\$ 1 M</u>
	\$223.7 M

This suggested allocation of costs is based on our assessment of jurisdictional roles and financial capability. The main points of this assessment are:

- Each major proposal requires a body or agency to co-ordinate policy formulation and planning, a group to acquire lands or development rights, a group to design and develop, and a group to operate the project or program.
- The majority of our recommendations require that policy and overall planning be co-ordinated at a regional level. In particular, programs for shore protection, stream valley protection, fish and wildlife, recreational harbours, major parks, the Beach and Hamilton Harbour require regional or inter-regional approaches. We believe that the Conservation Authorities and the Regional Governments are best suited to give leadership in these matters. We recognize that the Regional Municipalities are newly organized and that the distribution of responsibilities between the Regions and the Authorities will have to be worked out over a number of years. In the meantime, to get essential projects underway, we recommend that the Conservation Authorities immediately accept a co-ordinating role for projects including shore protection, stream valley protection, recreational harbours and fish and wildlife

- Substantial portions of land acquisition and land clearance costs must, we believe, be borne by the Province and the Conservation Authorities until the Regional and Area Municipalities have established the necessary administrative and financial base to take on projects of the scale we recommend.
- The development and management of public waterfront areas should generally be divided between Regional and Area Municipalities, depending on who the area is designed primarily to serve. The projects we have recommended should provide a basic framework within which private enterprises will subsequently invest, usually on lands leased from public authorities.

Priority items that should be commenced immediately are mainly policy making, planning and co-ordinating activities that are essential before specific works can be undertaken. They include:

- preparation of an overall Shore Protection Plan for the entire waterfront;
- preparation of policies on land use, high density locations, subdivision control, use of estate lands, and dedication of waterfront lands for public purposes as outlined in this report;
- formation of an inter-regional Joint Committee on Landfill and Water Quality in Hamilton Harbour. The function of this committee would be to develop policies and criteria, based on our recommendations and criteria, for improving water quality and water use in the Harbour;
- preparation of a Stream Valley Protection Plan that will ensure the long term preservation and enhancement of stream valleys as recreational and environmental assets;
- adoption of overall policies for the preservation, and development of fish and wildlife resources;

- adoption of overall policies for parks and water-front access;
- preparation of a long range development plan for the Beach, that recaptures the unique recreation potentials of the area.
- preparation of official plans, zoning by-laws and development agreements that reflect the foregoing policies

(Our recommendations on criteria and methods for developing these policies are given in a general way in the relevant sections of this summary, and in more detail in the main report).

Some projects can be immediately carried forward including:

- programs for phasing out small sewage treatment plants and introducing tertiary treatment in large plants that will continue in operation;
- construction of essential shoreworks according to policies and criteria provided elsewhere in this report;
- continued efforts to improve the quality of industrial effluents into the air and water;
- acquisition of Beach properties.

CHAPTER 3: SHORE
PROTECTION

Introduction

At present, relatively rapid erosion is occurring in more than 10 areas on the north shore and in about 6 areas on the south shore. Altogether almost 19 miles of shore need immediate protection work.

The following locations are in most urgent need of protection (location numbers refer to Map 2 and Unit Maps at the end of the report):

Oakville:

South of Lawson Park (0 15)
West of Oakville Water Treatment Plant (0 31 to 0 34)
Baillie Estate area (0 39)
South of Sir John Colborne Park (0 44 to 0 46)
Bronte Waterfront (0 46 to 0 49 and area 0 51)
South of Shell Park (0 58 to 0 59)
South of Skyway Golf (0 60)

Burlington:

Elizabeth Gardens shore (B 2 to B 7)
Walkers Line (B 13)
Sioux Lookout Park (B 19)
from Rossmore Blvd. to Market St. (E 20 to B 24)

Stoney Creek:

near Teal Avenue (S2)
between Millen Road and Dewitt Road (S1 to S10)
Jones Road, immediately west of a series of groynes (S14)
McNeilly Road (S17)
Fifty Mile Point (S32)
bluff erosion east of Fifty Mile Point (each of unit 38)

The most serious erosion is occurring in Stoney Creek at Millen Road (S7) and McNeilly Road (S17) (Figure 1).

The Shore Properties Study Section of the Canada Centre for Inland Waters (CCIW) has measured rates of erosion in the area since 1970. The following table lists the extent of bluff erosion observed during this period.



FIGURE 1: Miscellaneous protection at McNeilly Road, Stoney Creek.



FIGURE 2: Miscellaneous protection at Jones Road, Stoney Creek



FIGURE 3: Bluff erosion at Cherry Beach, Stoney Creek

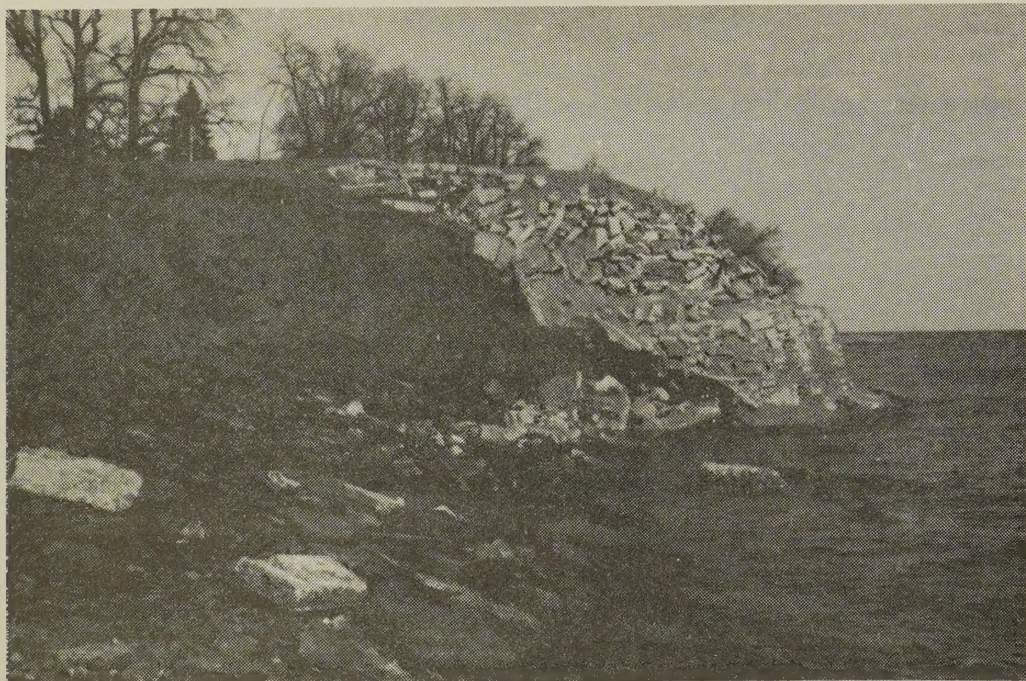


FIGURE 4: Limited protection, Guelph Line, Burlington

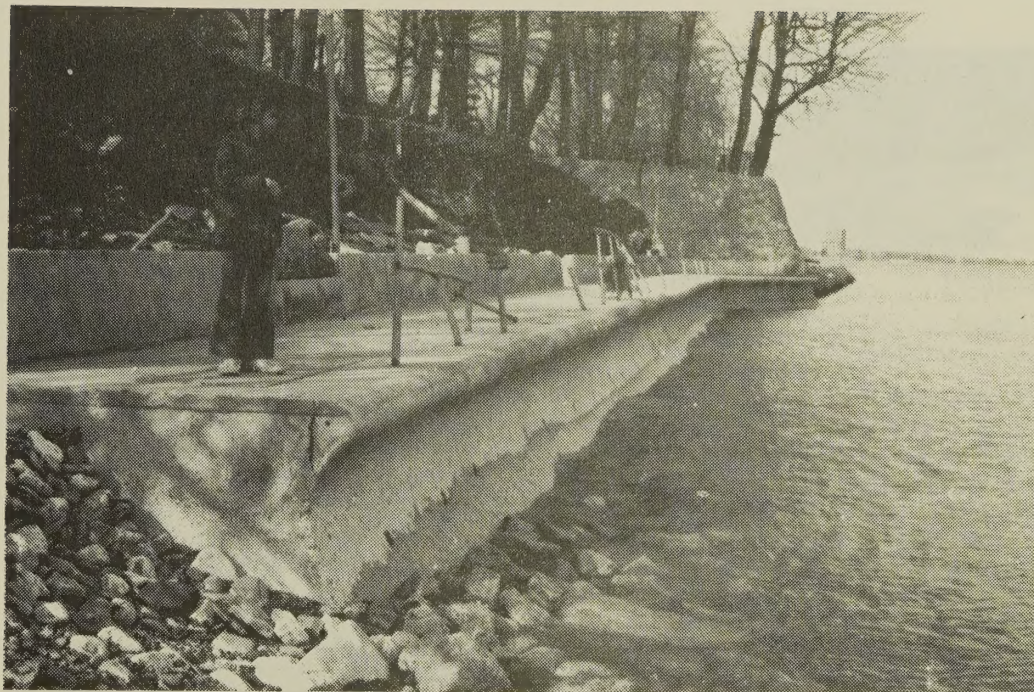


FIGURE 5: Erosion behind deflector wall at B.P. Centennial Park, Oakville

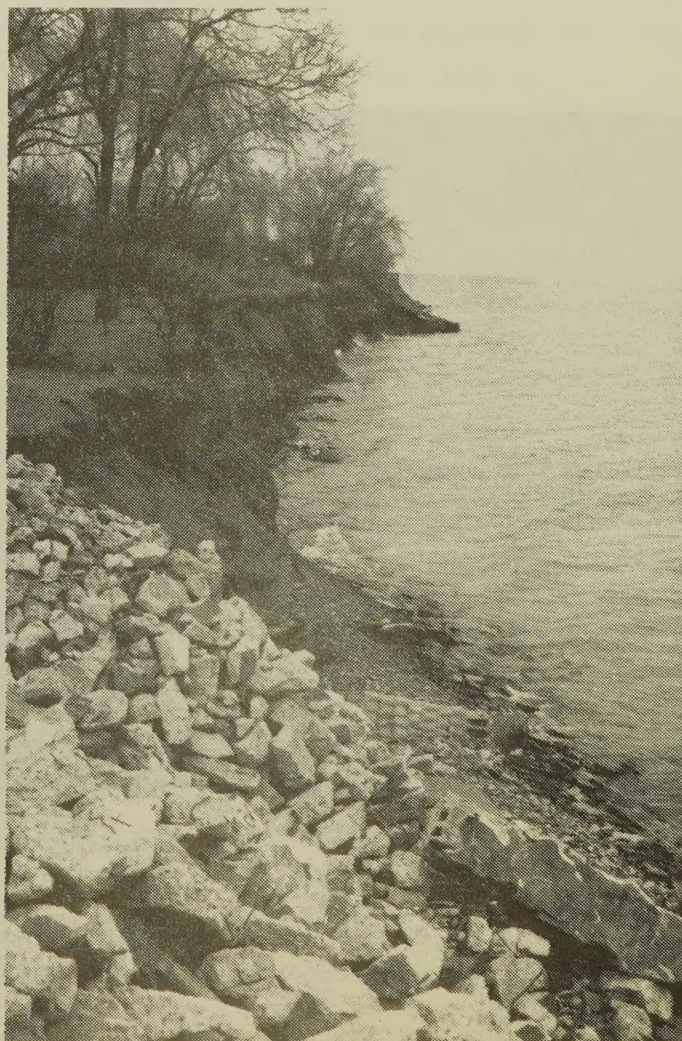


FIGURE 6: Bluff erosion at Third Line, Oakville

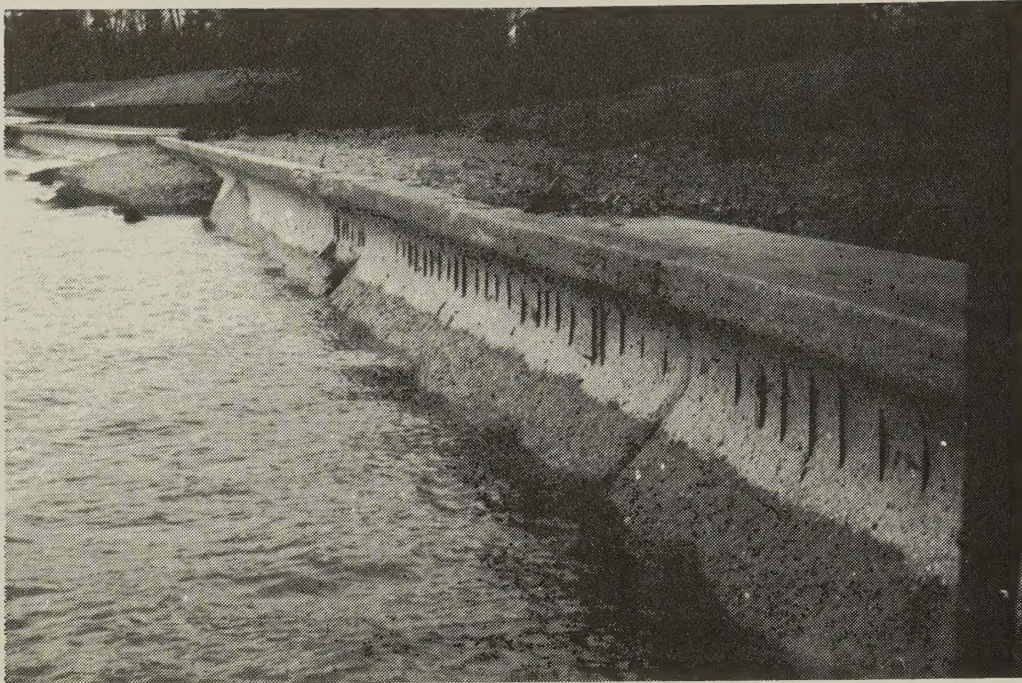


FIGURE 7: Eroded deflector wall, Ninth Line, Oakville

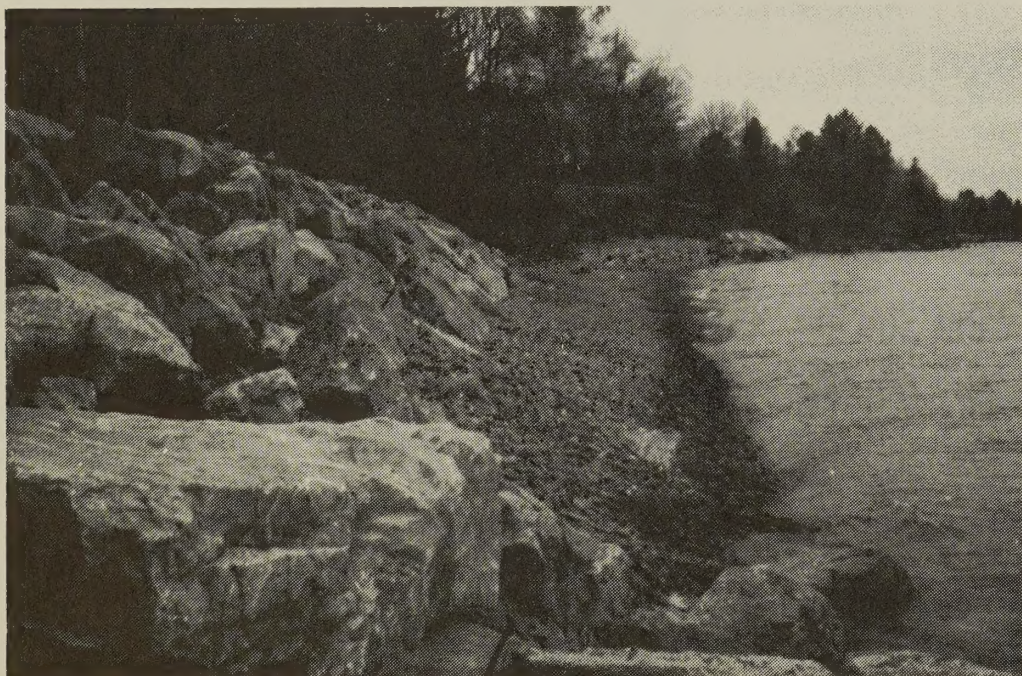


FIGURE 8: Rubble protection and bluff erosion,
Ninth Line, Oakville

	Erosion	
<u>Location</u>	Since 1970	Spring 1973
<u>Halton County</u>		
Appleby Line (B10)	No Change	No Change
Belvedere Drive (O44)	3 feet	Protected, Nil.
Cudmore Road (O57)	13-1/2-foot gully eroded into bluff. General bluff face cut back 2 feet.	
<u>Wentworth County</u>		
Millen Road (S7)	11 feet	9 - 10 feet
McNeilly Road (S17)	6 feet	5 - 6 feet

Record high water levels contributed greatly to the unusually high erosion rates in the spring of 1973.

General Comments on Erosion

Erosion is a natural process, and protection from erosion in one location generally leads to increased erosion elsewhere. It is therefore essential that any system of shoreline protection be planned for the entire area within which erosion is occurring.

Erosion in one area results in deposition in another area. The Beach area, for example, is maintained by erosion of the north and south shores of Lake Ontario, so that protection of these shores must take into account a possible decrease in deposition of sand on the Hamilton-Burlington Beach.

Erosion is greatest where waves break on a relatively steep sloping lake bed at the toe of a bluff such as at Cherry Beach (Figure 3).

The rate of erosion depends mainly on the type of shore soil and the degree of exposure to waves and currents. Shores composed mainly of silts, clays and shales erode rapidly. If there is a sand or gravel beach, much of the wave force is absorbed by the beach and erosion is minimized.

The rate of erosion is affected not only by waves but by long-term variations in water levels. High

water levels enable waves to attack the shore because beaches that normally give protection are submerged.

In the Halton-Wentworth area, wave action generated by easterly winds is the major cause of erosion.

Wave action is particularly serious during periods of high lake levels. During high lake levels in the spring of 1973, more than nine feet of shore were lost at Millen Road in Stoney Creek (S7) and more than five feet were lost at nearby McNeilly Road (S17).

Storm conditions on Lake Ontario can generate waves with a calculated significant deep water wave height of thirteen feet.

By combining the highest daily mean water level of 248.19 feet (May 1973) with the Hurricane Agnes Wind set-up of 1.44 feet, it is indicated that the maximum design water level for waterfront planning should be established at 250.0 feet (International Great Lakes Datum) and that seawall heights should be at least 260.0 feet (IGLD) to protect against storm waves. At present, there are only one or two isolated examples of seawalls in the area that give protection to this level. Examples of adequate rubble protection may be seen near McNeilly Road in Stoney Creek (S17) and near Ninth Line in Oakville (O.9).

Ice and cold weather often have beneficial effects on erosion because winter storms are unable to erode the frozen ground and ice may prevent wave build-up. In spring, however, the release of frozen water often causes softening and slumping of the shore which, combined with high-water levels and spring storms, can cause rapid erosion.

Erosion Control Techniques

Future shoreline management should be aimed at controlling erosion, collecting drift materials to form stable beaches, and protecting structures from damage.

Seawalls and revetments, placed parallel or nearly parallel to the shoreline, are the most commonly used form of protection. Major limitations in their use are that they only protect the land immediately behind them. They do not protect land on either side and when built on a receding shoreline, recession will continue on either side. In addition, seawalls and revetments may intensify any loss of beach material in front of the structures.

Properly constructed groynes will arrest littoral movement and collect materials for beach development. Within the area, groyne systems have been commonly used along the south shore and have been somewhat successful in trapping drift materials and in stabilizing the shoreline. However, erosion is continuing and a program should be initiated which will identify the patterns of transport and deposition of material in the area.

Man-made islands can be used for shore protection. In addition to providing open space, islands can be designed to enclose sheltered water areas for recreational harbours, boating, fishing, swimming and skating. Fill from industries or construction sites can substantially reduce the cost of island building. When islands are being constructed, the protection should be installed first and fill added later as it becomes available.

Eleven desirable locations for island construction are shown on Map 2. Each location has been selected with a view to enhancing the local recreational potential of the waterfront. Seven of these locations (marked H) would enclose a recreational harbour. The locations are:

- Joshua's Creek (O1) H
- Oakville Harbour (O27) H
- Bronte Harbour (O51) H
- Elizabeth Gardens (B6)
- Shoreacres (B12) H
- Tuck Creek (B14)
- Spencer Smith (B33) H

Confederation Park (H46) H

Cherry Beach (S8)

Trillium Bay (S18)

Fifty Point (S32) H

Existing Conditions:
South Shore

The south shore between Fifty Mile Point and Hamilton Harbour is mainly composed of silt-till overlain by sand. Several small creeks enter the lake in this section, but their mouths are usually cut off by gravel and sand bars and as a result they contribute very little beach-building sediment to the lakeshore.

A miscellany of protective works have been used in an effort to control waterfront erosion. Numerous groynes have been constructed where natural beaches exist, while retaining walls and rubble revetments have been used to protect the bluff sections. In general there has been little or no co-operation between adjacent waterfront property owners, and wholesale dumping of a wide variety of waste materials has resulted in destruction of the aesthetic appeal of several areas - the waterfronts in the vicinity of McNeilly and Jones Road illustrate this point (Fig. 1 and 2). Isolated, localized attempts at erosion control have accelerated erosion on adjacent properties.

Existing beaches on Fifty Mile Point provide some natural protection to the shoreline, but during high-water levels the beaches are submerged and waves erode the low bluff behind the beach. Rubble protection should be provided to prevent further recession of the shoreline, particularly between the groynes lying to the west of the point.

New protection works, recently constructed at the end of the East Street, already show scour effects at either end of the protected sections and will cause erosion of private property unless some additional end protection is provided (S25).

Well-protected areas stand out as small promontories and clearly indicate that the remedial work has prevented erosion of the bluffs. Figure 1 shows a rubble protection near the end of McNeilly Road. Here

the bluff has been protected, but erosion has taken place on either side.

The unprotected bluffs at Cherry Beach are eroding rapidly and the shoreline has already receded well beyond the protection works around the end of Dewitt Road. Remedial work is urgently required on this section of the waterfront (Fig. 3).

Confederation Park is well protected by natural beaches, but some additional rubble protection should be provided along the waterfront road, particularly in the corner near the pavilion.

Existing Conditions:
North Shore

There are extensive areas of exposed bluff on the north shore between Oakville and Burlington. Of almost 17 miles of shoreline, little more than 5 miles are protected. Concrete walls, heavy rubble and gabions are being used. There are relatively few natural beaches to protect the bluffs.

The lake bottom generally slopes steeply, and during high-water levels, waves break inshore and erode land at relatively high elevations. In many cases protection has not been built high enough and is washing out.

Waste construction materials used at the end of the Guelph Line have not been taken to a sufficiently high level and appear to have been used without backing material. In addition, the largest blocks are too light to withstand heavy wave action. Figure 4 illustrates the material used and shows how the protected promontory is being outflanked by erosion of an adjacent area.

At the BP Centennial Garden (Fig. 5) there is erosion occurring above and behind the concrete wall and there is some scouring of the stone protection on the promontory. The elevation of the walkway is about 249 feet (IGLD).

Fig. 6 shows the effects of erosion at the end of Third

Line. The road-end protection is probably too light to last more than a few years, and may accelerate erosion of adjacent property.

Deflector walls and heavy rubble are used in adjacent locations on the Ninth Line. Fig. 7 shows the effects of erosion by waterborne gravel on the face of the concrete wall. The heavy rubble protection (Fig. 8) has been very effective and shows how a shingle beach has developed immediately in front.

Erosion in Other Areas of the Waterfront

The Hamilton-Burlington Beach is naturally protected by virtue of its being a wide beach where the destructive action of waves is dissipated. Hamilton Harbour, is too small for large waves to be generated and serious erosion is therefore not a problem.

Recommendations

To ensure that adequate protection is provided in the long term, a co-ordinating master plan providing design details for erosion control works along the entire waterfront should be prepared immediately. All future protection works should be based on this Shore Protection Plan, and to ensure that design standards are being maintained, all private protection works should require construction permits.

The proposed Shore Protection Plan should be based on a detailed study of the Lake Ontario shore from Fifty Point to the Oakville-Mississauga boundary. The plan should contain designs and cost estimates for each section of shoreline as well as a schedule of priorities.

Studies of physical factors should include:

- nature of beach materials;
- slopes and elevations of the various beach zone escarpments;
- existing works such as groynes, wave walls and docks; incident wave characteristics and water levels;
- foundation conditions;
- littoral transport and beach processes; and
- probable consequences of allowing present erosion trends to continue.

Details of the plan should be based on considerations of:

- compatibility with existing and proposed shoreline uses;
- effects on adjacent shore areas (e.g. changes in rate of drift of lake bed materials that may affect stability of adjacent beaches);
- aesthetic aspects;
- socio-economic implications and feasibility; long-term consequences to dynamics of shoreline formations;
- consequences of failure of protective works or beach development measures;
- capital and maintenance costs;
- cost sharing among private and public sectors;
- implementation techniques.

A Great Lakes Shore protection report is currently being prepared by the Province of Ontario and the Federal Government. It is expected that this report will provide, in September 1974, considerable information on subjects that should be included in the Shore Protection Plan for Halton-Wentworth.

Until the Shore Protection Plan is prepared, new erosion control works will continue to be required. Interim design standards should allow for a design maximum water level of 250 feet (IGLD: International Great Lakes Datum) and provide protection against wave action to not less than elevation 260.0 feet (IGLD). In general, protection should be provided between the design minimum water level of 241.5 feet (IGLD) and an upper level of 260.0 feet (IGLD).

Armour stone blocks directly exposed to wave action should weigh not less than 5 tons and should be laid on a 2 to 1 slope with graded rubble core and filter zone between the armour stone and any backfill material.

The dangers of isolated, localized attempts at erosion control cannot be overemphasized. Protection from erosion in one area generally leads to increased erosion elsewhere; shoreline protection works should

therefore be permitted only according to an overall plan that takes into account the entire area within which erosion is occurring.

Costs

Seawalls constructed from stone rubble would provide the least expensive form of protection. Walls of this type that will provide protection to elevation of 260 feet (IGLD) could be constructed for about \$400 per lineal foot. The use of islands, island promontories or breakwaters is an expensive protection technique and would require justification on the grounds of need for harbour protection or recreation. Depending on the depth of water and availability of material, islands or promontory breakwaters could cost up to \$1200 per lineal foot.

In Halton Region, protection works are required on about 12.5 miles (75%) of the Lake Ontario shore. In Hamilton-Wentworth Region, protection works are required on about 6.2 miles (54%) of the shore. Total estimated cost of the necessary protection is about \$44 million. Approximately \$29 million would be required in Halton and about \$15 million in Hamilton-Wentworth. (In both regions, more than 87% of these shores are privately owned).

Implementation

At present the only significant shore protection activity is carried out on an ad hoc basis by Area Municipalities and private individuals or groups. There is no overall shore protection policy or plan and no public or private agency has a clear mandate to plan or construct shore protection works.

We recommend that the Conservation Authorities immediately undertake the joint preparation of the Shore Protection Plan for the entire area. In the long term, we believe that the Regional Municipalities, when they are in a position to do so, should assume the responsibility for shore protection planning and development with support from the Conservation Authorities, Area Municipalities and senior governments.

The Conservation Authorities (and in the future the Regional Municipalities) should have power to approve all works that would in any way change the shoreline or affect rates of erosion.

Implementing policies for the Shore Protection Plan should incorporate, as far as possible, the following principles:

- construction of the works should be by public authorities;
- local, provincial and federal governments should participate in cost-sharing. (At present, Federal assistance is provided only if damage results from a federally controlled activity, such as shipping. No provincial funding is available, but special cases are considered);
- private owners on the waterfront should be required to contribute to construction costs; through special tax levies;
- if private owners have existing shore protection works that meet standards of the Shore Protection Plan, or if private owners grant public access right along their shore, they should be compensated through reductions in the special tax levy for protection works;
- representatives of appropriate federal, provincial and local agencies, and private owners should be involved throughout the preparation of the Shore Protection Plan;
- wherever possible, public promenades should be incorporated into the design of shore protection works (see Chapter 9).

The Conservation Authorities should follow these general steps in solving the waterfront erosion problem:

1. Obtain agreement from the municipalities on general land use and planning objectives for the waterfront. (Our recommendations are shown on Map 2).

2. Prepare the Shore Protection Plan containing specific erosion control proposals for all parts of the shorefront. Involve shorefront property owners in the surveys, analyses and plan formulation.
3. Work out cost-sharing, construction, maintenance and ownership policies in consultation with shorefront owners, representatives of the general public and representatives of the various levels of government.

In order to carry out the work successfully, it will be important to have not only the best possible technical advice on planning, engineering and legal matters, but careful attention should be given to citizen involvement and public relations.

CHAPTER 4: WATER QUALITY

Introduction

A high quality of natural waters is essential for public water supplies, for swimming, boating and fishing, for fish and wildlife habitats, and for generally enriching our surroundings. The Lake Ontario shore has high potential for boating and swimming, but large sections of the shore are frequently too polluted for body contact. Portions of Hamilton Harbour particularly along the south shore are so polluted that they cannot support aquatic life of any kind. Cootes Paradise and other marsh areas can continue to support a variety of wildfowl only if the water quality is not further degraded. If the more than thirty streams in the area can be preserved from pollution they will continue to enrich the urban environment by supporting a variety of fish and wildlife.

The principal sources of water pollution in the area are eight municipal sewage treatment plants, two of which discharge into Hamilton Harbour, and one into Cootes Paradise; and about forty storm and industrial waste outfalls, more than thirty of which are in Hamilton Harbour. Increasing public concern about the quality of these effluents may lead to substantial improvements in the quality of our natural water resources.

Under a Canada-U.S. agreement on water quality in the Lower Great Lakes, tertiary treatment will probably be introduced to treatment plants in the Study Area by 1975. The principal objective of this improvement is the removal or fixation of phosphorus.

Existing Conditions: Lake Ontario

During the summer, dominant south-westerly winds over the lake induce a clockwise circulation which carries a plume of pollutants from Hamilton Harbour towards Bronte and Oakville. A reversal of wind direction results in an anti-clockwise circulation that transports pollutants to the Hamilton-Burlington Beach area.

South-westerly winds also produce an upwelling of colder water along the north shore. Average monthly water temperatures in July are 7 degrees Fahrenheit cooler on

the north shore than on the warmer south shore.

There is not a serious problem with algae growth or cladophora in those parts of Lake Ontario within the study area, and with the continuing phosphorus abatement program, no problems with algae are foreseen.

Existing Conditions:
North Shore

Beaches along the north shore are generally unsuitable for swimming because of high bacterial counts from sewage pollution and frequent periods of low-water temperatures during the summer.

Aside from harbour water drifting along the shoreline with the prevailing wind-driven currents, water quality problems tend to arise at the outfall from overloaded sewage treatment plants. The plants at Navy Street (026), Elizabeth Gardens (B4), and Drury Lane (B37), are likely to be phased out over the next few years, thereby improving local conditions.

The sewage treatment plant near Coronation Park (042) presently has a capacity to average load ratio of 1.3 to 1, indicating a possibility of by-passing untreated sewage during periods of high run-off. Because Coronation Park lies adjacent to this outfall, it is desirable to either increase treatment capacity or instal storage to provide for peak flow conditions. The present plant site has room for expansion to almost three times its existing capacity.

Existing Conditions:
Lakeside of the Beach

Flooding occurs throughout much of the Beach area, where ground level is below the present high-water level. At these times partially treated or raw sewage from septic tanks adds to waterfront pollution.

Water quality along the Beach and Confederation Park is frequently below that required for swimming due to polluted water from the Harbour and from Stoney Creek (when wave action from the east scours out the sand bar at the creek mouth). Based on a coliform count criterion of less than 1,000 organisms per 100 mil., this beach is unsuitable for swimming about 20 per cent of the time.

Water temperatures along the beach are usually higher than the north shore by about 5 degrees Fahrenheit.

Existing Conditions:
South Shore

Water quality on the south shore is generally suitable for body contact recreation, but problem areas sometimes occur at the mouth of Stoney Creek and in the vicinity of McNeilly Road where the E.D. Smith Plant discharges 50-600 pounds of biochemical oxygen demand (BOD) per day into the lake.

Lake water quality along the Stoney Creek shore is generally suitable for swimming and water temperatures in the area are generally higher than elsewhere on the Halton-Wentworth waterfront. This area therefore has high potential for swimming, particularly if sand beaches can be established in conjunction with shore protection works.

Existing Conditions:
Hamilton Harbour

Hamilton Harbour receives effluent from Dundas, Burlington, and Hamilton Sewage Treatments Plants (D12, B33, and H27) from eighteen industrial sewer outfalls in Hamilton and fifteen storm water outfalls in Hamilton. In addition, several streams bring various forms of pollution into the Harbour. These industrial and community wastes mix and partially break down in the Harbour, and sediments settle out. Polluted water that does not break down in the Harbour, flows out the Burlington Canal and into Lake Ontario.

Sewage treatment improvements are in process at Dundas, Burlington and Hamilton, and further improvements are required by 1975 under an international agreement on Great Lakes water quality.

Hamilton Harbour acts in some ways as a natural treatment plant for effluents being discharged into it. Thus, any reduction in size consistent with continued heavy waste loadings can only reduce the quality of water within the harbour itself and of that entering Lake Ontario.

The environmental effects of landfilling in the harbour are complex. A simple mathematical model which considered harbour waters to be uniformly mixed, indicates that on the basis of present waste loadings, the 20 per cent reduction in the area, which has occurred between the 1917 and 1970, has caused a reduction in dissolved oxygen concentration of approximately 7 per cent. Similarly, increased waste load discharged to Lake Ontario has resulted in BOD to the lake being increased by about 12 per cent.

Filling over sediments with a high oxygen demand would initially be a benefit to harbour water quality, but such a benefit would likely be of short-term duration as new sediments replenishing the BOD demand would deposit elsewhere in the system or be carried into Lake Ontario.

A comprehensive study by the Ministry of the Environment relating to Hamilton Harbour is now in progress. Their report containing a water quality model is expected to be completed in 1974. It is expected that this model will be capable of determining the effects on water quality, of relatively small changes in Harbour water volume, such as would be caused by landfill projects. When the model becomes operative, it will be a useful tool for evaluating landfill applications.

Under present provincial regulations, no one may dump or fill in the Hamilton Harbour without the approval of the Hamilton Conservation Authority, except that the Hamilton Harbour Commissioners can fill on their own lands without the approval of the Conservation Authority (Ontario Regulations 118-73 and 56-69).

Water quality is generally poor in all parts of Hamilton Harbour. The highest pollutant concentrations occur near the industrial south shore and in Windermere Basin (H24).

In addition to receiving the flow from Redhill Creek and some local drainage from the south, Windermere Basin, receives the discharge from the Hamilton Sewage Treatment Plant (averaging 49 mgd in 1972). Large amounts of highly contaminated sediments have deposited in the basin. This action has reduced the pollutant load escaping to the body of the bay, but the accumulated deposits have led to periodic anoxic conditions (lack of oxygen) in the basin. The bacteria contamination is extremely high; at times, coliform counts exceed 100,000 organisms per 100 ml., just outside the basin.

Until the new Hamilton treatment plant becomes fully operational, substantial quantities of sewage will enter the bay without treatment. Even when the new plant becomes operational, the basin is likely to show only a slow recovery of water quality.

The industrial shore is heavily contaminated by industrial wastes from the steel companies. In addition to iron wastes, there is an average of 60,000 pounds of BOD and 20,000 lbs. of other solubles discharged each day. There are also a number of smaller industrial effluents and stormwater outfalls, including foul sewage overflows.

There are no viable benthic organisms in this part of the harbour. The bottom sediments are extremely high in iron, in places there is 75 percent Fe_2O_3 , and iron deposits exceed 15 percent over about half of the bay.

The steel companies are presently engaged in a program of reducing their waste output, particularly of suspended solids. In general, new production facilities have a much reduced waste load per unit of production compared with previous facilities. The immediate benefits from proposed improvements in the steel companies' waste output will be upgrading water quality on the north shore and possibly reducing the extent of the existing zone of very low quality water. In addition, a reduction in BOD loadings should improve oxygen levels in the deeper part of the bay. Another important aspect of upgrading the steel plant waste treatment

will be to reduce the spread of sediments that are incompatible with aquatic life.

Iron wastes discharging into the harbour are apparently precipitating out much of the phosphorus in the various waste discharges thereby reducing the amount of phosphorus nutrient escaping to Lake Ontario. Any reduction in waste loads should be carried out in such a way that this balance between iron and phosphorus is not destroyed.

The south shore, with the possible exception of the extreme west end in the vicinity of Harvey Park, is unsuitable for any form of recreational activity. Improvements are likely to be slow in coming.

Water quality along the north shore of the Harbour and at the north-west end, while unsuitable for body contact recreation, is suitable for boating. Reductions in waste loading and atmospheric emissions should lead to improvements in these areas.

Exchange flows between Hamilton Harbour and Lake Ontario, caused principally by differences in water level between the two bodies of water, are augmented during the summer months by currents induced by temperature differences. Preliminary estimates indicate that total annual exchange flows amount to approximately four times the volume of the harbour. This turnover of water is an important aid in keeping up the quality of Harbour water.

Existing Conditions: Cootes Paradise

There is evidence of a general reduction in water quality in Cootes Paradise as a result of increased waste loads particularly from the Dundas Sewage Treatment Plant where frequent discharges of raw sewage by-pass the plant following rainstorms. The future of Cootes Paradise as a fish and wildlife interpretive area is threatened by contamination from the Dundas Sewage Treatment Plant; by Chedoke Creek sanitary and industrial wastes, and sediments; by sediment pollution from Spencer Creek; and occasionally by pollutants entering from Hamilton Harbour. A continuation of present input levels will lead to steady deterioration

in the ability of Cootes Paradise to support the present diversity of wildlife.

Effluent from the Dundas Treatment Plant is discharged into the Desjardins Canal. During movement of waste along the canal suspended solids settle out and some nutrients and BOD are removed. But the effectiveness of this reclamation is continually reduced by accumulated sludge. Oxidation of the sludge results at times in anoxic conditions (insufficient oxygen) at the upper end of the canal.

Cootes Paradise is strongly affected by developments within its catchment area, and particularly any actions that will change waste inputs and through flows. Water in Cootes Paradise is not well-mixed so waste inputs significantly affect local water quality.

At the west end of Hamilton Harbour, there are two oil pipelines that present an oil-spill hazard to Cootes Paradise. A gate or boom at the entrance into Cootes Paradise should be constructed as a precautionary measure.

Water Quality Criteria:

Guidelines for the control of water quality in Ontario are outlined in a June 1973 publication by the Ministry of Environment, "Guidelines and Criteria for Water Quality Management in Ontario". The criteria for water quality are carefully defined and are applicable to each major water use category including: agriculture, fish and wildlife, industrial water supply, public water supply, recreation and aesthetics, and total body contact recreation. In addition to these Provincial criteria, we recommend, below, additional criteria that should be applied to water quality control in Hamilton Harbour.

Planning Objectives:

The following policies and recommendations are designed to achieve high standards of water quality in Lake Ontario, Hamilton Harbour, Cootes Paradise, in the more than thirty creeks, rivers and streams in the area, and in the many ponds and marshes.

Implementation of these policies and recommendations will ensure that future populations can enjoy the full potentials of these water bodies for water supplies, swimming, boating, fish and wildlife habitats, and for generally enriching the urban environment.

Policies and Recommendations:

Wherever feasible, small local sewage treatment plants should be phased out and treatment centralized at large modern facilities where tertiary treatment can be provided. These changes should be carried out as soon as financing permits.

Specific plans for sewage treatment in Oakville appear to include the phasing out of the small plants at Navy Street, Elizabeth Gardens and Drury Lane and expansion of the plant near Coronation Park. We agree with this approach, and in addition, tertiary treatment should be included in the near future. Enough land is available to triple existing capacity.

The Skyway Sewage Treatment Plant in Burlington is to be expanded fourfold in the near future and as a result will discharge a higher quality but greater volume of effluent. We recommend that the discharge pipes be extended to the central harbour to provide added opportunities recreational areas in the northeast part of the harbour. Tertiary treatment should also be provided in the near future.

The Dundas Sewage Treatment Plant is overloaded, but plans have been made to double capacity. Effluent from this plant should not, in our opinion, be discharged into West Pond or Cootes Paradise. If the discharge pipes are to be extended into the Harbour they should be carried well beyond Grindstone Bay to avoid impairment of the potentials for recreation and aquatic life. The high cost associated with this alternative suggests a reassessment of the economics of pumping the Dundas wastes into the Hamilton sewer system. The large new Hamilton Sewage Treatment Plant has ample capacity to accept the increased loads and tertiary treatment is planned for the near future. We favour this latter scheme.

When tertiary treatment has been installed at the Hamilton plant, Windermere basin should be dredged of organic sediments to allow for recovery of dissolved oxygen and to reduce odour. The dredged material may be pumped to temporary drying areas on land and then either burned or used as fertilizer.

A sewage treatment plant is planned for the vicinity of Fifty Point Park to service the area now on septic tanks. Discharge from this plant should be carried at least 5,000 feet offshore to minimize impairment of water quality for body contact recreation at the shore. If possible, the plant should be located to the east of Fifty Point Park to minimize odour problems in the park. Wastes from the E.D. Smith Cannery which currently cause local BOD problems on the shore near Fruitland Road should also be treated at this plant.

The proposed Fifty Point plant would serve the eastern part of Stoney Creek and the western part of Grimsby. If development proceeds in Stoney Creek as anticipated, the Fifty Point plant could eventually be considered for enlargement. A regional analysis should be prepared that evaluates whether all sewage for the Stoney Creek area should eventually be treated at the Hamilton plant, at a large plant at Fifty Point, or elsewhere.

The Stoney Creek lagoon in Confederation Park carries a high BOD and coliform count. Dredging will improve the condition, but the sources of coliform bacteria should be identified by field survey of the creek. Such discharges should be routed to the Hamilton sewer system. The lagoon itself is not a suitable for body contact use, and when wave action scours the sand bar on the lake side, it discharges pollutants onto the adjacent beaches.

Improved industrial effluent quality and tertiary treatment at the Hamilton and Skyway treatment plants (together with dredging Windermere Basin) will result in gradual improvement in the quality of the water discharging through the Burlington ship channel into Lake Ontario. Any significant additional filling of the harbour will delay this improvement.

As a general policy, no further filling in the Harbour should be permitted. However, some agreements for further filling have already been made, and we believe that legitimate cases for additional fill or construction on piles may arise. We recommend that all future applications to place landfill, or to construct on piles or barges be subject to review against the following criteria and objectives:

- fill proposals should be approved only if they are deemed to contribute substantially to future public benefits in terms of health, aesthetics, recreation, the urban environment and the economy;
- the quality of water flowing into Lake Ontario from the Harbour should not prevent swimming on the lake-side of the Beach at any time (Provincial Criteria A and R-2);
- the quality of water in the Harbour should be improved to allow anadromous fish (salmon and trout) to spawn in Grindstone Creek, and to permit body contact along the north shore, in Grindstone Bay and north of a curved line drawn roughly from the Harbour Commissioners Docks (H15) to the proposed Interpretive Centre (H35) (Map 2, "Wildlife and Recreational Water Quality Zone" Provincial Criteria F and W, and A and R-1);
- fill should be suitably protected to prevent leaching or erosion of fill material;
- fill materials should not contain chemicals that could injure water quality;
- construction on piles should be preferred over landfill.

Applications to fill should be examined using the comprehensive water quality model being developed by the Water Quality Branch of the Ministry of Environment. When this model becomes available, it is expected it will be capable of determining the effects of relatively small amounts of landfill on Harbour water quality.

The following are our comments on specific sites in the Harbour that are known to be currently under consideration for filling.

- During the next 20 years, filling in front of industrial lands should be limited to the headline agreed to in 1971 (H22).
- A 100 acre water area at the head of piers 11, 12, 13 and 14 (H20) should be reserved for possible port expansion. Fill should be permitted only on the basis of proven need for landfill and after all reasonable alternatives for redevelopment of existing land to the south and west have been carefully studied.

- Expansion of the railway right of way into the Harbour (H9) should not be permitted until there is an agreed long range plan of development that includes:
 - eventual disposition of the CNR yards,
 - future alignment of Burlington Street Extension,
 - open space and recreational harbour plans for the Lax property and inland areas to the south,
 - suitable pedestrian connections from Dundurn Castle to the waterfront.
- A community park and public recreational harbour should be permitted, partially on landfill, piles and floating docks at Indian Creek (B42).
- A tourist commercial development (accommodation, restaurant, and harbour, partially on landfill, piles and floating docks, should be permitted north of the Canada Centre of Inland Waters (B41).
- Landfill or piles should be permitted for the proposed Interpretive Centre of the Environment (H36).
- Existing landfill and berms (H30, 32, 33) should be removed and, if feasible, used for one of the above projects.
- Expansion of the Queen Elizabeth Way on the Beach should be permitted partly on piles or fill in the harbour if necessary. The amount of filling should be determined in part by the need to keep highway noise and exhaust fumes away from proposed recreation areas along the sand beach. Final approval of the highway alignment should not be given until a long-range development plan for the Beach area has been prepared.

Implementation

Water quality policies are now guided by the Province through its "Guidelines and Criteria for Water Quality Management in Ontario." The principal means of implementing these policies is through the planning and management of community and industrial sewage treatment.

The responsibility for planning and managing community sewage treatment plants has recently been transferred from Area Municipalities to Regional Municipalities. The responsibility for monitoring remains a Provincial responsibility.

Because water quality is a matter of inter-regional concern it should continue to be managed under provincial policies and criteria. Co-ordination of local water quality policies and water quality management should continue to be the responsibility of the Regional Municipalities and should be based on consultations with the Ministry of the Environment, the Conservation Authorities, Area Municipalities and private enterprise.

Responsibility for demonstrating that a waste plant is harmless to receiving waters rests with those producing the discharge. Costs incurred in improving the quality of industrial effluents should continue to be borne by the industries, while costs of improving effluents from the various sewage treatment plants should be borne by the communities being serviced.

Although existing legislation, especially Regulations 118-73 "Dumping of Fill Regulations", give the Hamilton Conservation Authority control over the placing of fill in most parts of the Harbour, and give the Harbour Commissioners control over the remaining areas, decisions on Harbour fill are so wide ranging in their implications that joint consideration to all filling applications should be given by several authorities. We, therefore, recommend that no fill, piles, shore works, or dumping be permitted in Hamilton Harbour without a review by the following authorities:

- The Regional Municipality of Halton
- The Regional Municipality of Hamilton-Wentworth
- The Halton Region Conservation Authority
- The Hamilton Region Conservation Authority
- The Hamilton Harbour Commissioners
- The City of Burlington
- The City of Hamilton.

There should be right of appeal from any decision to the Minister of the Environment.

We believe that dividing responsibilities for water quality and filling in the Hamilton Harbour between the Hamilton Conservation Authority and the Hamilton Harbour Commissioners in consultation with other agencies is, at best, an interim solution. In the long run, these responsibilities should be administered by the Regional Municipalities through a Joint Committee on Landfill and Water Quality in Hamilton Harbour.

At present, the boundary of jurisdiction in the Harbour between Halton and Hamilton-Wentworth Regions is the north shore of the Harbour (Province of Ontario, Bills 151 and 155). This effectively means that the entire Harbour is in Hamilton-Wentworth Region. Halton Region has no legal control over water quality, landfill or water uses in the Harbour. But these matters are of direct concern to the people of Burlington in particular. If the recommended Joint Committee on Water Quality and Landfill is to be effective, a more equitable regional boundary should be established in the Harbour. We recommend that a new inter-regional boundary be established approximately on a line joining the west-end of the Burlington Canal and the east boundary of Woodland Cemetery projected about half a mile into the Harbour (Map 2). To expedite interim implementation, the Conservation Authority boundaries should be adjusted to conform with this recommended regional boundary.

A carefully designed monitoring program should be instituted to identify changes resulting from waste load reduction in the Hamilton Harbour and to provide data on what further action may be required. This program should be a joint project of the Halton and Hamilton-Wentworth Regional Municipalities.

Regional governments should maintain close coordination with the Ministry of Environment, Water Quality Branch, when planning location and capacities of sewer systems, sewage treatment plants and tertiary treatment systems.

Dredging of lagoon areas and Windermere Basin should be a responsibility of the Regional Municipalities in consultation with the Conservation Authorities.

CHAPTER 5: AIR QUALITY

Existing Conditions: Issues and Concerns

The Air Management Branch, Ontario Ministry of the Environment, has the responsibility for setting up air quality policies and criteria, obtaining measurements of air pollutant emissions, and for enforcing controls on ambient air quality. It also reviews and approves the plans of the industries to reduce emissions to satisfactory levels.

The principal sources of air pollution in the Study Area are:

- (a) The steel companies in Hamilton Harbour and the near-by slag processing companies;
- (b) The oil refineries in Oakville;
- (c) Motor vehicles.

The major pollutants of concern in the Halton-Wentworth study area are:

suspended particulate matter
sulphur dioxide
carbon monoxide
nitrogen oxide
oxidants
hydrocarbons.

The Air Management Branch has established criteria for maximum permissible concentrations of these air pollutants as follows:

Concentration in P.P.M.

	<u>Sulphur Dioxide</u>	<u>Carbon Monoxide</u>	<u>Nitrogen Oxides</u>	<u>Oxidants</u>	<u>Hydro- carbons</u>
1-hour average	0.25	40	0.20	0.10	-
Daily average	0.10	8	0.10	0.03	-

Suspended particulate matter is measured in units of Coefficient of Haze (COH/1000 feet). Recommended maximum criteria for particulates are:

24 hour maximum	1.0	COH units
Annual average maximum	0.45	COH units

The poorest air quality in the study area exists near the Hamilton Harbour industrial zone. The waterfront area primarily affected is the Beach area near the former Burlington Skyway toll booth. Both industrial and motor vehicle emissions contribute to the air quality problem in this specific area.

Hamilton Harbour/ Industrial Area:

Concentrations of particulates (dust) in the air downwind from the industries in Hamilton Harbour present the greatest problem. The prevailing wind in the area carries these and other pollutants generally over the Beach, somewhat north of Confederation Park.

Although long term data is not available, Air Management Branch figures for dustfall in the Hamilton Industrial zone show an overall improvement of about 50% between 1968 and 1971. However, 1-hour and daily average figures are still above the Provincial criteria and the Beach area remains seriously affected with a 1-hour maximum in 1971 of 7.1 COH.

Particulate emissions occur in several phases of the steel making process, and in many of these, e.g. the coking process, it is difficult to achieve satisfactory dust removal. In addition, particles from material stockpiles are occasionally swept up by wind, despite an oil coating on the materials that is intended to minimize the effect of wind.

The industries in the harbour, particularly the steel companies, have installed over the past few years, highly efficient and expensive particulate removal systems. Recently, the Ontario Air Management Branch has approved plans by the steel companies for additional air quality control processes that will be in operation by 1975. The industries will invest several million

dollars in these efforts to improve air quality, and the schedule that has been accepted for implementation is the shortest that is technically feasible. However, it is unlikely that the resulting air quality will be satisfactory for intense use of the Beach without additional measures.

Other pollutants of concern are the gases: sulphur dioxide, nitrogen dioxide, and hydrogen sulphide. Concentrations of nitrogen dioxide and sulphur dioxide are moderate in relation to several other parts of the province, with the Ontario objectives only being occasionally exceeded. However, controls over these emissions should be implemented by the major companies as soon as reliable technology becomes available. For sulphur dioxide control, several systems are now being tested and should be available for full-scale installation within two years. Techniques for controlling emissions of nitrogen dioxide are still in the early stages of development and are not likely to be available for several years.

Hydrogen sulphide has a highly offensive odour and is produced when hot slag is cooled by water before it is removed for reprocessing or for fill. One way of reducing production of the gas is to let the piles cool in the air rather than cooling with water, but this slower procedure would probably require more land for cooling areas. The economic implications of this technique are not available.

Oakville Refineries:

The major emissions from the oil refineries in Oakville are carbon monoxide, oxides of nitrogen and hydrocarbons. (These same pollutants are present in motor vehicle exhausts). Data is not available on the concentrations of these pollutants in the air downwind of the Oakville refineries. However, the oil companies are required by the Ontario Air Management Branch to control emissions of these pollutants at or below acceptable limits if technology is available. An ambient air quality station to measure emissions of these pollutants should be installed in the Oakville area by the Air Management Branch.

Data on sulphur dioxide shows an improving trend over the past four years, and acceptable annual levels are acceptable at all monitoring stations.

Motor Vehicles:

Motor vehicle emissions, mainly carbon monoxide and hydro-carbons, vary with vehicle age, driving speed, traffic density and the efficiency of pollution control devices. Highest concentrations of polluting gases are found in areas immediately surrounding major traffic arteries at times when traffic is stalled or moving slowly. Emissions are higher in winter than in summer.

Pollution control devices were initially intended to be brought to peak efficiencies on 1975 models. However, the automotive industry has applied for an extension of at least one year on this schedule, and the current energy crisis has cast confusion on the program. It is now reasonable to assume peak control installations on 1977 or 1978 models and that the vast majority of vehicles on the road will be acceptably equipped in the early 1980's.

Within the study area the most sensitive regions to vehicle emissions are Cootes Paradise and the Royal Botanical Gardens. Any plans to increase traffic flows in that general region will require careful route selection and road design. This caution applies also to potential traffic noise.

A variety of alternatives for expansion of the Queen Elizabeth Way across the Beach are being considered. These include surface, elevated, and tunnel schemes and combinations of these. From both noise and air pollution aspects, the tunnel is preferred, although it will probably be the most costly. An elevated road, possibly tiered would have second preference.

Objectives:

For the immediate future, air quality objectives for the study area should be:

To achieve a level of air quality, particularly in wild-life and recreational areas, that is within the short-term permissible levels established by the Air Management Branch, Ontario Ministry of the Environment.

To eliminate those aspects of air quality, such as dust, and noxious odours, which are particularly detrimental to recreation and the general living environment.

Recommendations:

It is recommended, in order to achieve a more noticeable improvement in air quality in the study area, that there be more vigorous enforcement of the short-term i.e. daily and 1-hour, Ontario objectives.

A summary of concentrations of pollutants at Hamilton (Woodlands Park) for period 1969-1971, prepared by the Ministry of Environment (March 1972) shows that while annual average pollutant levels appear low, maximum 1-hour average and maximum daily average levels are still above Ontario objective levels.

Greater pressure should be brought to bear on industries which are the major contributors to this pollution, to utilize all available technology which could reduce emissions to acceptable levels. To achieve this objective, the Air Management Branch of the Ontario Ministry of the Environment should continue discussions with harbour industries to establish procedures for reducing emissions of hydrogen sulphide from slag cooling, and for reducing dust from material stockpiles.

The Ontario Ministry of Transportation and Communications should adopt the traffic tunnel alternative on the Beach as the best means of minimizing air and noise pollution in the Beach area.

Until the air quality conditions are improved in the Beach area, low intensity uses should be planned for, especially in the area of the former toll booth.

The route, geometric design and construction of any new road in the study area, especially in the vicinity of Cootes Paradise, should be reviewed with regard to its impact on air quality.

Implementation:

The Air Management Branch of the Ontario Ministry of the Environment should continue to have the major responsibility for formulating air quality policies and criteria, and for measuring air quality conditions in the study area and for enforcing controls over major sources of air pollution. The Branch should be supported in policy formulation and control of vehicle emissions by the Ontario Ministry of Transportation and Communications. Regional and Area Municipalities should advise the Provincial Government on monitoring air quality and should assist the Province in communicating with private industry.

Increasing efforts should be made by industries to reduce air pollution.

The tolerance of plants to concentrations of specific pollutants varies over a wide range, particularly in the Royal Botanical Gardens where so many species are growing. It may not be possible to regularly maintain the required quality of air, which may be far in excess of human requirements, in order to grow a particular plant variety.

Present ambient air quality conditions in the Royal Botanical Gardens are not sufficiently known, therefore, the Air Management Branch should establish a continuous ambient air quality monitoring station in the Gardens to obtain information for guidance in selecting plants.

CHAPTER 6: STREAM
VALLEY PROTECTIONExisting Conditions,
Issues and Concerns

There are twenty-three major creeks in the area, seventeen on the north shore, three in Cootes Paradise, one in Hamilton and two in Stoney Creek. The largest streams are Sixteen Mile Creek (Oakville Creek), Twelve Mile Creek (Bronte Creek), Grindstone Creek, Spencer Creek, and Redhill Creek. (Map 2 and Appendix 1)

Erosion along the creeks in the immediate vicinity of the Waterfront is relatively minor. However, there is considerable sheet and gully erosion occurring in upstream agricultural and construction areas; this causes relatively high sediment loads in several streams.

Sediment concentrations in the creeks are unlikely to cause long term sediment build ups because the wave and current actions in the lake are strong enough to disperse the sediments. However, at Stoney Creek, sediments are building up behind a sand bar which is broken only occasionally by heavy storm waves.

High lake levels have caused increased sediment build ups at stream mouths because stream velocities have been reduced by high lake water. However, this build up is temporary and will wash away when lake levels fall.

There is very little gradient between Dundas and Hamilton Harbour, and high lake levels have been partially responsible for recent flooding in Spencer Creek. Otherwise, flooding has not been a serious problem in the area except for occasional localized sediment dams and ice jams at bridges and culverts.

Undesireable filling in stream valleys, apparently by private individuals, is taking place on Redhill Creek and Bronte Creek.

Urban development and transportation facilities have been permitted too close to a number of stream valleys. As a consequence, concrete storm-water channels have been constructed and streams have been put into sewers and

straight earth channels. In each case the stream has been essentially lost to the community as an environmental asset. This process is continuing throughout the area. Redhill, Chedoke, Indian and Spencer Creeks have been most seriously damaged. Roseland Creek remains attractive but is largely in private yards and is inaccessible to the public. There are fifteen remaining streams with good potential for being preserved in a relatively natural state. If suitable development controls are immediately imposed, parts of the following streams and valleys can be preserved:

Joshua's	Appleby
Wedgewood	Shoreacres
Morrison	Tuck
Sixteen Mile	Falcon
Taplow	Grindstone
Fourteen Mile	Stoney Creek
Twelve Mile	Fifty Mile
Sheldon	

Planning Objectives

Streams and stream valleys are irreplaceable environmental resources. Whenever feasible they should be maintained in a natural state, and included as vital components of community plans and community open space networks. Each valley should be maintained in a green state with grass, trees, shrubs and gardens in order to reduce the volume of flash runoff after a rain. If the green area is wide enough it will be unnecessary to damage streams by unsightly channelization techniques.

Stream valleys should, wherever possible, be held in public ownership and their function as carriers of storm water should be managed in ways that preserve the natural character of the stream.

There should be right of public access along the full length of stream valleys in order to establish public walking trails and, if feasible, bicycle trails.

Wherever feasible, the fish and wildlife potentials of streams and stream valleys should be protected and enhanced.

Policies and
Recommendations

Stream valleys are a vital element in overall urban land use and community structure. They can play a significant role in shaping the kind of living environments that Canadians will have in the future. Stream valley protection is, therefore, not only important to local communities, but to urban development in the country as a whole.

In the Halton-Wentworth area the Conservation Authorities should take the initiative in stream valley policy formulation and protection procedures by:

- preparing a Stream Valley Protection Plan that identifies long range objectives for each stream in terms of recreation, aesthetics and storm water runoff;
- carefully appraising all development proposals in the light of the Stream Valley Protection Plan;
- regular inspection of all valleys, public and private.

The principal components of the Stream Valley Protection Plan should be:

1. Analysis of each stream catchment area in terms of probable future development, soils, water sources, valley characteristics, existing and estimated future flow conditions.
2. Classification of streams as to desirable future use for parks and recreation, fish and wildlife, storm water, municipal sewage, and as to the type of development that streams are likely to flow through.
3. Preparation, for each stream, of development control policies and criteria including: type of desirable development in the drainage area, stream and bank stabilization techniques, set-backs for private ownership and buildings on table lands at the top of the bank, valley cross-sections and stream alignments for streams that may have to be altered due to future functions and flows, techniques for controlling streams and valleys in private ownership.

Proposals for development near any creek valley should be subject to the strictest possible review. Private property set-backs for the table land along the top of each valley will depend on the slope and character of the valley wall and other criteria established by the Stream Valley Protection Plan.

No new private lots should be designed having stream valley lands as rear yard areas.

Wherever possible, existing undeveloped parts of stream valleys and strategic table land should eventually be obtained in public ownership.

Where channelization or bank stabilization are required, the natural characteristics of stream valleys should be preserved through the use of gabions or grassed waterways.

Stream erosion can be reduced by impounding water in upstream ponds and lakes. This approach should be investigated as a possible alternative to bank stabilization and channelization. However, this technique should be used only when the stream is not intended for fish that spawn in the upper reaches of streams.

Flood plain mapping, already begun by the Conservation Authorities should be completed for all streams in the area.

Conservation Authority powers over the placing and dumping of fill and debris in stream valleys should be rigorously enforced, particularly on Redhill Creek and Stoney Creek.

Erosion of upland areas and sedimentation at stream mouths should be controlled by improved agricultural and construction practices. Road construction, new subdivisions and poor agricultural practices are currently leading to unnecessary sedimentation and sheet erosion.

Periodic dredging will be required in recreational harbours that are proposed to be located at stream mouths; especially at Indian Creek and Sixteen Mile Creek. Harbour designs should take maximum advantage of lake

currents and wave action that will carry sediments to desired locations.

Valley lands should be used wherever feasible, for pedestrian connections to the shore.

Detailed Recommendations:
Oakville

Joshua's Creek, Sixteen Mile Creek (Oakville Creek), Twelve Mile Creek (Bronte Creek) and Sheldon Creek should be the basis of major urban open space systems. Priority should be given to land acquisition and control measures that will ensure the long term protection of these streams and valleys.

Sediment deposits in the first meander of Sixteen Mile Creek should be maintained in a natural state for wild fowl.

Sediment deposits in Twelve Mile Creek (Bronte Creek) have created a marsh area and refuge for Canada Geese. This area should be preserved in a natural state. Intensive boating in the vicinity of the Bronte Creek Marsh will spoil the potential of the marsh as a wildfowl refuge. Power boats should be prohibited north of Highway 2.

In the Bronte Harbour, a dredging program will have to be continued. The operation of the recommended enlarged harbour will not be impeded by sedimentation if careful attention is given to harbour design.

Detailed Recommendations:
Burlington

Substantial sections of the Burlington creeks flow through private property and difficult negotiations will be necessary to control the future character of these streams. Wherever possible, stream valleys should be acquired in public ownership.

If the recommended marina is constructed near the mouth of Indian Creek (Chapter 10), a build up of sediment may be expected due to the reduction of littoral drift. Occasional dredging will be required to keep the harbour clear and to maintain creek flow.

Siltation at the mouth of Grindstone Creek is reducing the wildlife potential of Grindstone Bay and marsh areas

near the mouth of the Creek (B65). More stringent controls are required over upstream development projects.

Detailed Recommendations:
Cootes Paradise, Dundas
and Hamilton

The main streams entering the Cootes Paradise area are Spencer Creek and Chedoke Creek. Both streams have been rather brutally straightened to accommodate railway and highway alignments. A policy of re-establishing the streams in a natural state will be difficult to implement; however, the channelization has been mainly with earth rather than concrete and a well prepared landscape treatment could recapture some natural stream valley qualities.

The Chedoke Creek is now simply a drainage channel beside Highway 403. In such a conspicuous location, a substantial landscaping investment is warranted.

Spencer Creek, parallels the TH and B railway. Eventually the railway tracks should be removed and the creek area integrated into a parkway scheme including the Desjardins Canal, Centennial Park (D.11), Highway 102, the railway lands and the proposed new York Road.

There are six smaller streams entering the Cootes Paradise area; some with intermittent flow. All but one enter through the Royal Botanical Gardens and it may be assumed that these streams will be protected in perpetuity. However, the stream that runs from Rock Chapel to the Desjardins Canal (D-2) will be principally in the Parkway Belt and the valley should be acquired as Botanical Gardens or Conservation Authority land.

A stream flowing from ponds in the Dundas sanitary landfill site (D-9) follows the alignment of the proposed new York Road. These ponds and the stream should be incorporated into a pedestrian and bicycle greenway connecting Cairns Avenue (D-13), the Desjardins Canal, the H.E.P.C. right of way, and the West Pond area of the Royal Botanical Gardens.

Redhill Creek rises in the fields south of Stone Church Road, falls over a striking limestone precipice at Mountain Brow Boulevard, passes through Kings Forest

Park (a fine mixture of active and passive areas including the Bruce Trail), provides a delightful playground and park-like area between residential neighbourhoods south of Barton Street, then disappears behind fill and dumping areas (H-41) until it reaches the Queen Elizabeth Way where the creek becomes the receiver of the effluent from Hamilton's sewage treatment plant.

The upper parts of the valley are quite well preserved, but the stream is receiving raw sewage. The sources should be identified and stopped. Filling begins near King Street where housing has been permitted too close to the top of the bank. North of Barton Street, industrial-commercial owners are filling into the woods on the valley slope. North of the railway, the valley and stream are in danger of being lost as an environmental resource. Quick action must be taken by municipal, regional and provincial authorities if the valley is to be saved as a link in the regional open space network joining the escarpment to the waterfront (Map 1).

The Conservation Authority, the Regional and Area Municipalities and the Provincial Ministry of the Environment should participate actively in a program to save Redhill Valley and should work to establish a pedestrian-bicycle connection across the Queen Elizabeth Way (Kerns Road may be a suitable location, H-42).

North of the Queen Elizabeth Way there are two ponds that are remnants of the Redhill system. Confederation Park should be expanded to include these ponds, and the general appearance and flow characteristics should be improved, but their role as waterfowl resting and feeding areas should be carefully preserved (H27A).

Detailed Recommendations:
Stoney Creek

Stoney Creek discharges into Lake Ontario through Confederation Park and a lagoon created by a sand bar. Above the Queen Elizabeth Way, the creek is partly marshy as it passes through an industrial area. In order to preserve the quality of the water in Confederation Park, restrictions concerning the dumping of debris in the

creek should be strictly enforced in the industrial area.

Active erosion is occurring in the lagoon. This may be checked by grading and revegetating the eroding faces.

There are in Stoney Creek a number of additional intermittent streams and ditches, five of which end in ponds (S1 to S6 and S13). All of these valleys and ponds should be preserved in as natural a state as possible within a community open space system. However, when the ponds occur in proposed redevelopment blocks (S3 and S12) they should be used as the basis of inland harbours, lagoons or a canal system perhaps with a "hard" or formal edge.

South of the Queen Elizabeth Way, all valley lands should be acquired as soon as possible in order to protect them from eventual encroachment by community development, and to minimize the need for channelization as development proceeds. Now is the time, when large parcels of undeveloped land remain, to acquire the spaces that will protect the stream valleys and establish the framework for a future community open space system.

Implementation

The Conservation Authorities, through flood control powers, and the Area Municipalities through planning, zoning and park development, now have some control over stream valleys. However, we believe that stream valleys can play such an important role in shaping the quality of urban life, that policies and programs for their protection and enhancement must be more firmly established as part of the overall planning process. The Conservation Authorities should immediately undertake the preparation of a Stream Valley Protection Plan that classifies each stream as to desirable future functions. The Plan should set out development control policies for each stream including uses of valley and table land and set-backs for buildings. Policies that are developed by the Plan should be adopted as soon as possible by the Regional and Area Municipalities and incorporated into Official Plans and development control practices.

The proposed "Stream Valley Protection Plan" will probably cost about \$50,000 and should be commenced as soon as possible.

CHAPTER 7: FISH AND WILDLIFE

Introduction

Fish and wildlife resources in the study area include:

- some species of game fish such as trout and pike where favourable conditions prevail;
- coarse fish, e.g. carp, in lower quality waters;
- small mammals in ravines and woodlots;
- larger mammals such as deer and fox are occasionally found in larger, protected areas;
- numerous species of song birds;
- waterfowl (the Great Lakes shoreline is a major flyway for Canada Geese, whistling swans and other large migrating birds).

The habitat needs of these fish and wildlife are as variable as the adaptability of each species. However, the expansion of wildlife in the area is generally limited by: lack of adequate vegetation, inadequate water quality and limited space. Taken together, these limitations tend to reduce the diversity of habitats and the stability of food chains. Unless there is careful management of the remaining habitats, there will be a continuous reduction in the populations of most species.

Fish and wildlife fulfill three major functions in urban environments.

1. As an important part of the biological system they support and interact with man. Some species interact in a local ecosystem, e.g. in a marsh. Others may be part of a regional ecosystem covering a much broader area, e.g. migratory ducks and geese. If either type is threatened, either directly or through restrictions on their habitats, survival of the species may be endangered; especially those that are already limited in numbers, e.g. osprey. In a world context, when fish and wildlife are endangered, so is man who depends on them for food and spiritual fulfillment.
2. Fish and wildlife provide opportunities for educating man about his co-operative role in the biological environment. Species close to urban centres are

particularly important because urban man may feel divorced from the biological environment.

3. Fish and wildlife provide opportunities for recreation and relaxation, e.g. fishing, bird watching. As population increases, recreational demands on natural areas in urban zones will increase and there will be increasing danger of losing natural environments and their fish and wildlife resources.

Issues, Existing Conditions and Opportunities

In the Halton-Wentworth Waterfront area, fish and wildlife are confined to ravine, woodlot, marsh and waterway habitats. There are nine principal habitats (Fig. 9):

1. Sixteen Mile Creek and Island (Oakville Creek)
2. Twelve Mile Creek (Bronte Creek)
3. Grindstone Creek and Marsh
4. Hamilton Harbour
5. Cootes Paradise
6. Redhill Creek Marsh
7. Stoney Creek Ravine
8. Fifty Point Ponds
9. Lake Ontario

The major fish and wildlife issue in the Halton-Wentworth waterfront area, is deterioration of these habitats, caused by incompatible and insensitive human uses of these resources.

Fish: At present there is little sport fishing in the study area because of the lack of game fish and poor habitat conditions. Atlantic salmon once flourished in Bronte, Oakville and Redhill Creeks but they became extinct c. 1890 as a result of intense fishing pressure. Fishing pressure also drastically reduced the number of trout in these same waters.

The following waters have potential as spawning and game fish habitats:

- Oakville Creek
- Bronte Creek
- Grindstone Creek
- Lake Ontario

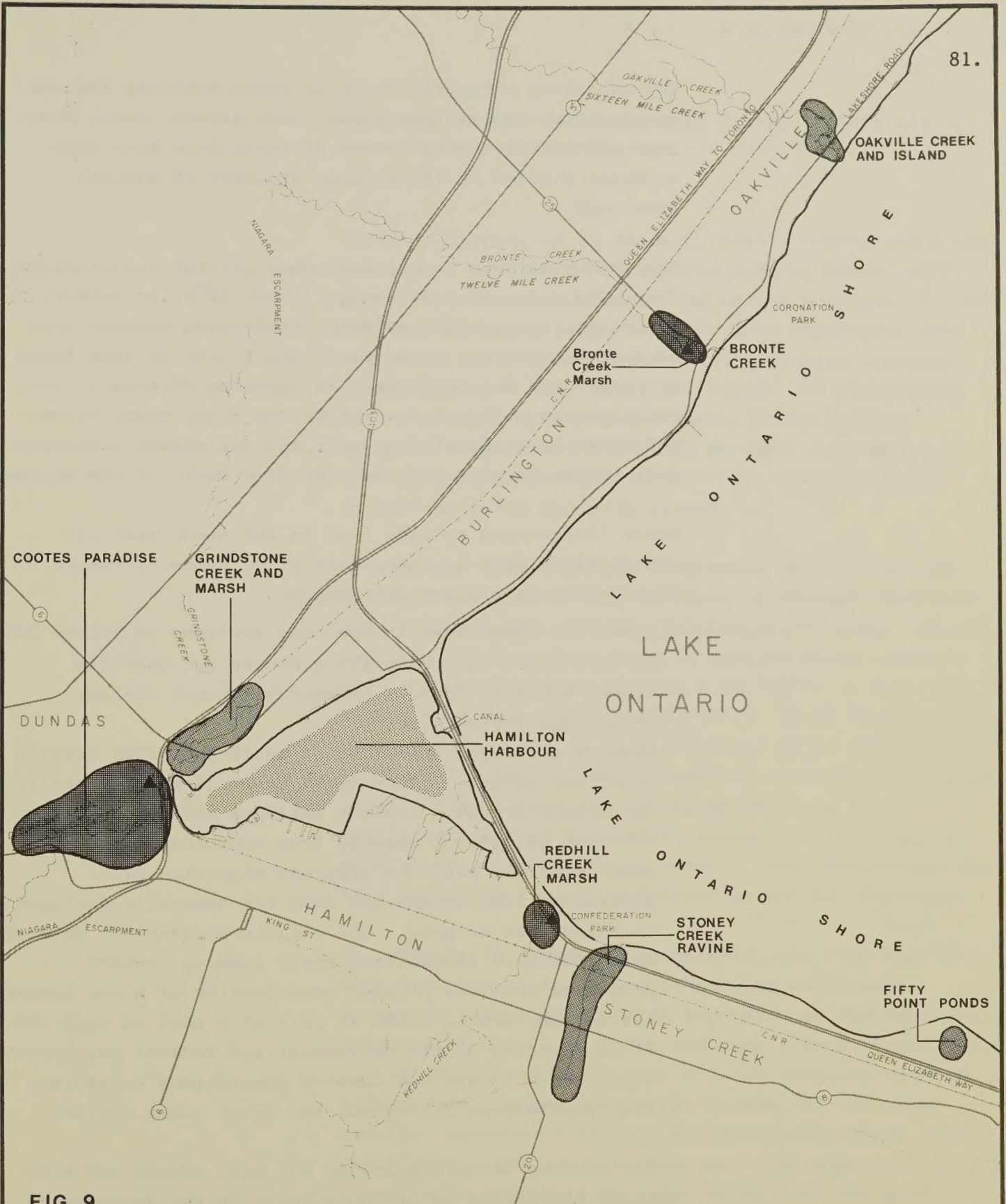


FIG. 9

LEGEND

PRIMARY AREA



SECONDARY AREA



TERTIARY AREA



PROPOSED INFORMATION CENTRE



FISH AND WILDLIFE AREAS

THE HALTON WENTWORTH WATERFRONT STUDY

Project
Planning
Assoc.
Ltd.

ACRES

Scale in miles



The game fish currently found in these habitats include brook, brown and rainbow trout, coho salmon, small mouth bass and northern pike. Some of these have been only recently planted by the Ontario Ministry of Natural Resources.

The game fish have fairly stringent habitat requirements. They require cold, clear water (about 60°F. in summer) especially in spawning streams. (Anadromous species such as salmon and trout spend their adult life in deep lakes or oceans and lay their eggs in spawning streams). Lack of stream bank vegetation raises the water temperature; sediments bury spawning gravels, and pollutants interfere with oxygen balance and thus the food chain in the stream.

Other limitations to game fish in the study area are obstructions such as dams, disruptive human intrusion along spawning streams and lamprey.

- There are three dams in spawning sections of Bronte Creek.
- Private shore ownership along Bronte and Oakville Creeks tends to promote undesirable human contact along spawning waters.
- Lamprey are major predators of adult game fish (mainly trout and salmon). They spawn in portions of Oakville and Bronte Creeks. Lamprey barriers have been constructed to prevent lamprey from spawning, but such dams interfere with the upstream migration of anadromous fish unless the dams are specially designed to allow fish to pass. The Ontario Ministry of Natural Resources have intensified their lamprey control programme with the planned construction of a new lamprey barrier for Bronte Creek in 1975 at a cost of \$200,000. It is a policy of the provincial and federal governments to continue to depress lamprey populations to protect fish populations throughout the Great Lakes system.

Deteriorating water quality in the main creeks and Lake Ontario has been a major contributor to the decrease of game fish. The major contributing factors are high sediment loads from upstream agricultural and construction activities and inflows of pollutants such as chlorine, sewage, and warm water. The lack of shade along streams has contributed to high temperatures. To some extent,

Oakville, Bronte and Grindstone Creeks exhibit all of these undesirable conditions for game fish.

Hamilton Harbour is at present, highly contaminated and presents a barrier to anadromous species which might spawn in Grindstone Creek. The bottom sediments in the harbour have high proportions of iron especially near the south shore steel mills, and the harbour receives sewage effluent from Hamilton, Dundas and Burlington. As a consequence, the north shore of the harbour supports only coarse fish such as carp, bullhead and alewife. Water conditions near the steel mills are unfavourable for any fish growth.

Recent game fish stocking programmes by the Fish and Wildlife Division of the Ministry of Natural Resources have supplemented existing populations of game fish, but few attempts have been made to improve water quality. Bronte Creek has been stocked with 20,000 or more coho salmon each year from 1971 to 1973. About 8,000 rainbow trout were planted in 1973. Initial plans for 1974, are to stock 200,000 chinook salmon and about 8,000 rainbow trout. Coho salmon are not expected to be self-sustaining as they apparently become sterile after a generation or two in fresh water. Thus populations will have to be continually sustained by annual stockings.

In addition to stocking the streams, the Fish and Wildlife Division of the Ontario Ministry of Natural Resources also plans a large expansion of the Lake Ontario salmonid fishery i.e. trout and coho salmon, (some phases are already underway). This will be combined with an intensified lamprey control programme and the water quality improvement program of the International Joint Commission. Included in this game fish expansion plan is a capital expenditure of about \$6 million for fish culturing facilities for propagating salmon, rainbow trout and other fish. The planned operating costs of these facilities will be in the neighbourhood of \$200,000 per year.

A move toward the amelioration of water quality has been made by a current rehabilitation programme of the Ministry of Natural Resources. There is also a budget of \$100,000 for treatment of dams and fishways, but this is probably insufficient to handle the planned increase in game fish stock.

Sport fishing in the study area is restricted by lack of access and support facilities. There are only 8 existing access points along Bronte Creek, and only 3 have public boat launching facilities. With the current fisheries expansion programme of Bronte Creek, these access points appear to be inadequate. Similar needs for accessibility will arise when the game fish populations in the other spawning streams are expanded.

The provision of deep water fishery for trout and salmon in Lake Ontario, has implications regarding access and onshore facilities. Launching sites for large vessels, and rental of "deep sea" gear or "open water" boats will be required together with associated recreation opportunities.

Smelt is plentiful in Lake Ontario especially since restrictions on commercial fishing have been imposed. They provide a major sport fishery in the spring, all along the waterfront. Up to 40,000 people participate in the sport each year at Oakville and Bronte Harbours, Burlington Beach and at several small beaches in the area. However, the number of public beaches and wharves is limited and the full potential of the smelt fishery is not being realized.

Alewives have long been considered a nuisance in the Great Lakes. They have been known to clog industrial and municipal intake pipes and are obnoxious during mass spring die-off when they litter the beaches. With the expansion of the salmon fishery in Lake Ontario the alewife may prove to be an extremely valuable food supply for salmon. At the same time, predation by salmon, trout and white fish may serve to control alewife numbers. Alewife has also been used in recent years for pet food and fish meal; this use may provide further control on

the alewife population.

Coarse fish found in the study area include carp, catfish, bullhead, gizzard shad, and suckers. They are found in almost all waters in the area because they can endure a variety of habitat conditions including turbid, warm, shallow and polluted waters. Some limited fishing for these species currently takes place.

Birds: The study area is on a major migratory path and is an important resting and breeding area for many species of land birds and waterfowl. However, the opportunities for nesting and breeding are becoming increasingly limited because of human encroachment.

Canada Geese and whistling swans use Cootes Paradise, Grindstone Creek, Bronte Creek and Redhill Creek marshes as resting and staging stops.

These locations are also breeding areas for a variety of bird species from the North Atlantic and the Maritimes. Unusual birds such as Kittiwakes, Golden Eagles, Ospreys and Jaegers frequent Cootes Paradise and attract ornithologists from Ontario and United States.

Birds feed and rest in each of the 9 habitats (except Fifty Point Ponds), but only 4 habitats are suitable for the breeding of sensitive species. They are:

Cootes Paradise	(H2)
Redhill Creek Marsh	(H27A)
Grindstone Creek Marsh	(B66)
Bronte Creek Marsh	(050A)

These areas are crucial to the survival of large migrating waterfowl. The only alternative locations in Southern Ontario which provide the seclusion and food needed by these species are Point Pelee and Long Point on Lake Erie. Any reduction in the breeding capacity of these locations could be a threat to migrating waterfowl populations.

Of the 4 habitats, Cootes Paradise is the largest and

has the greatest diversity of bird species. Wood ducks, herons and other sensitive birds nest here. However, this habitat is becoming contaminated by partially treated sewage from the Dundas treatment plant.

The western end of Desjardins Canal is heavily polluted, devoid of fish life and avoided by waterfowl. In addition, sewage sludge is flowing into West Pond and Cootes Paradise. These contaminants may be expected to eventually endanger the large population of birds in this habitat through alteration of plant growth.

The quality of Cootes Paradise as a waterfowl habitat could also be seriously affected by land use developments on its periphery which might increase sedimentation and human intrusion.

Opportunities for the viewing and interpretation of bird life in Cootes Paradise are limited to two observatory towers and a number of shoreline trails which provide opportunities to a limited public.

Redhill Creek Marsh is a significant waterfowl breeding habitat for teal, gallenules, mallards, and geese. However, the water feeding into it is heavily contaminated. There is no specific information as to how this affects the quality of the marsh for breeding, but it can be assumed to be eventually detrimental. At present, highway developments are being considered in the location of the marsh. The consequent effects of noise, sedimentation and human intrusion could be disastrous for this marsh habitat.

Grindstone and Bronte Creeks and Carroll's Point also support breeding waterfowl. Grindstone Creek marsh is currently filling with sediments which may eventually upset the biological balance of the marsh and endanger its breeding potential. However, it provides at present, a good habitat isolated from human intrusion. Bronte Creek marsh provides limited breeding potential and the harbour is a well-known site for waterfowl observation.

Poor air quality in the vicinity of the Hamilton Harbour steel mills is detrimental to the maintenance of nearby waterfowl or bird habitats. Until recently, the Harbour was used as a stop by swans and it is still used by shorebirds near the mouth of Redhill Creek, although the potential of this section as a bird habitat is severely restricted.

Ravines throughout the study area are frequented by many species of songbirds that are adaptable to human intrusion.

Ravines in Stoney Creek support large numbers of game-birds such as ring-necked pheasants. These locations are an important stocking supply for hunting areas throughout the province.

Land Animals: Larger animals such as deer and fox, are limited to two locations:

Cootes Paradise

Oakville Creek Valley Island

The maintenance of these species is becoming more difficult as a result of increased pollution and intensified human intrusion. Oakville Creek Valley Island is now managed in a natural state by the Halton Region Conservation Authority but this area will be subject to increasing recreation pressures from the surrounding community. Cootes Paradise also offers protection to these larger species. This habitat can be preserved by carefully controlling human access into the area.

Smaller land animals such as rabbits and raccoons live in ravines that have sufficient natural vegetation. However, most ravines in the area are already encroached on by private developments and undesirable noise is increasing. All but the most adaptable species will soon be driven out unless strict environmental controls are adopted.

For those who wish to observe and study wildlife in more isolated areas (e.g. waterfowl breeding areas and large

animal habitats), carefully positioned observation towers, or teaching stations are necessary to ensure controlled human intrusion and minimum disturbance. At present, there are few structured educational aids or centres in the area (except at Cootes Paradise).

Planning Objectives

The following objectives were taken as the basis for our recommendations on fish and wildlife planning:

To preserve and enhance fish and wildlife resources.

To enhance the urban environment in the Halton-Wentworth area by providing increased opportunities for people to interact with local fish and wildlife resources on a recreational/educational basis.

General Policies and Recommendations

The following nine habitats should be designated as important fish and wildlife habitats in the study area:

1. Sixteen Mile Creek and Ravine (Oakville Creek)
2. Twelve Mile Creek and Ravine (Bronte Creek)
3. Grindstone Creek and Marsh
4. Hamilton Harbour
5. Cootes Paradise
6. Redhill Creek Marsh
7. Stoney Creek Ravine
8. Fifty Point Ponds
9. Lake Ontario Shore

Each habitat should be classified according to its functions as a local ecosystem, as part of a regional ecosystem, and according to its potential as an educational and recreation resource. There should be three designated types of habitat:

Primary Resource Area
Secondary Resource Area
Tertiary Resource Area

Primary Resource Areas: These areas have important biological characteristics such as rare species, or high potential for recreation or education. Habitats in this

category are:

Cootes Paradise
Bronte Creek and Ravine
Redhill Creek Marsh

Cootes Paradise is the only habitat in the study area where natural means of population balance effectively operate; where rare birds such as ospreys have frequented; and where a diverse number of larger organisms exist. This area should therefore be managed primarily for wildlife preservation and human contact should be restricted to approved educational/recreational activities.

Because of the existence of a diverse mix of sport fish, waterfowl and small mammals, Bronte Creek and Ravine should function as an important educational/recreational area.

Redhill Marsh is an important waterfowl nesting area which should be protected from human intrusion.

Secondary Resource Areas: These areas are generally adjacent to heavily urbanized areas where human use of natural areas is expected to increase. Included in this group are:

Oakville Creek and Ravine
Grindstone Creek and Marsh
Stoney Creek Ravine
Lake Ontario
Fifty Point Ponds

These areas should be stocked with wildlife species which are adaptable to a relatively high level of human contact and with fish species desirable for sport fishing.

In Secondary Resource Areas, recreation needs should take priority over wildlife preservation. The ravines in this group could have pedestrian connections and perhaps bicycle and horseback riding trails.

Tertiary Resource Areas: These areas now offer a limited

environment for fish or wildlife. However, there is potential for long term rehabilitation. The only habitat in this category is Hamilton Harbour.

Interpretive Centres: The opportunities for viewing and studying fish and wildlife in the area should be improved by establishing at least two new information/interpretative centres.

A full scale nature interpretive centre with educational programmes and observation facilities should be located in the vicinity of the Bronte Creek marsh, north of Lakeshore Road. (Bronte Creek is the current site of a major sport fishery expansion programme and in addition supports numerous waterfowl which breed in the marsh. The Bronte Creek Valley is also a planned link between the new Bronte Creek Provincial Park and the Lakeshore).

A second, more tourist-oriented, centre should be established near the Redhill Creek Marsh. This centre would provide observation facilities for waterfowl in the marsh and could provide access and orientation to Confederation Park. These facilities should be co-ordinated with the touring system proposed in Chapter 11.

Specific Policies and Recommendations: Fish

The following four habitats should be designated as sport fishing areas:

- Oakville Creek
- Bronte Creek
- Grindstone Creek
- Lake Ontario

Stocking programmes of the Ministry of Natural Resources regarding game fish (salmon, trout, and bass) should be expanded and introduced into all the above areas.

A habitat improvement program should be co-ordinated with the stocking program to ensure that conditions will be suitable for the support of the selected numbers and species of fish. The important components of habitat improvement should be:

Water Quality

- minimization of silt and pollutants flowing into streams;
- increase of vegetative cover along streambanks; (this can be carried out in the framework of the proposed Stream Valley Protection Plan).

Undesirable Human Intrusion

- human access into spawning streams should be strictly controlled. (This may be enforced through public control of shores and seasonal closing of public access points).

Obstructions and Barriers

- stream access for anadromous fish must be improved by removing or modifying existing dams or obstructions such as lamprey barriers.

Lamprey Control

- effective lamprey spawning barriers with bypasses for anadromous fish should be installed in all 3 sport fishing streams.

The number of pedestrian access points to fishing streams should be increased except near spawning areas. Boat launching facilities for non-power boats should also be increased along streambanks. Power boats should be prohibited in fishing streams.

The proposed expansion of the game fishery in Lake Ontario by the Ministry of Natural Resources should be supplemented by on-shore access facilities for parking, boat launching and pedestrian access. As part of the Recreational Harbours development, marinas should be set up for rental of fishing equipment, and a variety of fishing boats.

A 'Put and Take' fishery of rainbow trout should be established in 2 locations:

- in the Head pond to be created above the new lamprey barrier planned for Bronte Creek;
- in Fifty Point Ponds.

Bank stabilization and planting should be carried out in these two locations, in order to support intensive fishing use. Some limited boating, such as rental of non-power boats, could be compatible with 'put and take' fishing.

Smelt fishing should be encouraged along the Lake Ontario waterfront by providing expanded public access to beach areas and to all new docks and breakwaters. These structures should be designed with spaces for fishing.

Lagoons created by breakwater islands and recreational harbours could also be pleasant places for game and smelt fishing. They should be designed to maintain a high level of water quality in the sheltered bays.

Specific Policies and Recommendations: Wildlife

Wildlife can be divided into 3 groups: waterfowl, land birds and land animals. The important habitats for each group should be designated and classified according to their importance as biological systems and their potential for recreation/education as follows:

- Waterfowl Breeding Areas
- Wildfowl Resting Areas
- Protected Areas for Land Birds
- Protected Areas for Land Animals

Waterfowl Breeding Areas: Waterfowl breeding areas in the study area are:

- Cootes Paradise
- Redhill Creek Marsh
- Grindstone Creek Marsh
- Bronte Creek Marsh

These areas are generally sensitive to human intrusion and pollution. Severe restrictions should be placed on human access and noise. However, educational facilities and programmes should be developed adjacent to Bronte and Redhill marshes where waterfowl could be observed without interference. Water quality is vital in waterfowl breeding areas and programmes should be established to maintain high water quality.

Of the 4 breeding areas, Cootes Paradise has the greatest diversity and in this area waterfowl should be most carefully protected particularly by improving water quality.

Water quality should be improved in Desjardins Canal so that waterfowl may again use the area. Since the canal is located adjacent to parkland the presence of waterfowl could constitute a pleasant scenic attraction.

To ensure minimum human intrusion and yet develop some of the recreation potential of Cootes Paradise, non-power boating could be allowed east of a line drawn from Princess Point to the Arboretum.

For the purpose of increasing the education benefits of Cootes Paradise a few additional observation towers and teaching stations should be constructed on existing trails.

West end trails along the Cootes Paradise shoreline should be made more accessible by constructing additional parking facilities.

A careful examination should be made of the impact of new development proposals on the waterfowl potential of Cootes Paradise. York Road bypass and a proposed housing development near West Pond could have negative effects on waterfowl populations.

The proposed highway development adjacent to the Redhill Creek Marsh could have disastrous effects on the breeding role of this area and therefore alternative locations for highway developments should be examined.

The Bronte Creek Marsh should not be included in any future pedestrian trail along Bronte Creek Ravine.

Wildfowl Resting Areas are used by waterfowl for resting and feeding, but are unsuitable for breeding. They include:

Lake Ontario
The Beach
Hamilton Harbour

In these areas, waterfowl species should be encouraged which adapt easily to human contact.

Water quality should be improved in these areas, particularly in Hamilton Harbour, so that more waterfowl would be attracted.

Protected Areas for Land Birds are areas with a large number and diversity of species.

Because of the sensitivity of some birds to human intrusion and to pollutants, the areas should have controlled human access. Cootes Paradise should be designated as a protected area for land birds.

Protected Areas for Land Animals are areas where larger land animals are found.

The degree to which these areas should be designated as a preserve and protected from human intrusion should depend on the complexity of the food web in each area. The only area with a number of larger herbivores and carnivores is Cootes Paradise. Public access to Cootes Paradise should be limited to pedestrian trails and observation towers where there will be ample opportunity for viewing and photography.

Oakville Creek Valley Island is frequented by deer and should be restricted. Vegetation along the ravine north of the Island should be maintained to ensure protection for deer as they travel to and from the island. However, no attempt should be made to restrict public access to the ravine.

A number of other ravines support smaller animals like rabbits which adapt well to human contact.

To protect existing wildlife and to ensure that these maintain a pleasant and quiet atmosphere, development

control policies should exclude any activity which causes undesirable noise, visual intrusion or pollution.

Recreation and education as it relates to ravine animals should be enhanced by pedestrian trails.

Implementation

The Conservation Authorities should jointly co-ordinate policy formulation for preserving and enhancing fish and wildlife in the study area. This will involve the designation and classification of areas and the formulation of management policies for the 9 habitats. The Authorities should be supported in this function by the Ontario Ministry of the Environment, the Ministry of Natural Resources, the Regional and Area Municipalities and the Royal Botanical Gardens.

Fish and Wildlife policies should be co-ordinated with Water Quality policy and the Stream Valley Protection policies.

Because the nine proposed fish and wildlife habitats are located in a number of different jurisdictions, the development and management of the habitats should be carried out, under agreed overall policies, as follows:

- The Royal Botanical Gardens should be responsible for Cootes Paradise, Grindstone Creek and Grindstone Marsh.
- The sport fishery in Lake Ontario and in the three designated sport fishing streams should be developed and managed by the Ministry of Natural Resources, Fish and Wildlife Division.
- Fifty Point Ponds should be the responsibility of the Hamilton Conservation Authority.
- Management of the Oakville Creek Valley Island should continue under the Halton Conservation Authority.

The remaining areas are in existing or proposed municipal parks, and in the waters of Hamilton Harbour and the Lake Ontario shore. In these locations the Ministry of Natural Resources and the Conservation Authorities should work out agreements with the Area Municipalities and Regional Municipalities on wildlife management programs.

Protection of designated wildlife areas should be ensured through official plan policies, zoning by-laws, and development control policies.

Pedestrian and boating access to designated fish and wildlife areas should be planned as an integral part of the fish and wildlife development and management program. Near the waterfront, most of these access facilities will be in local and regional park areas and should be planned by municipal parks authorities in consultation with the Conservation Authorities.

Access plans should be closely co-ordinated with plans for stream valleys, shore protection, waterfront parks and recreational harbours.

CHAPTER 8: ESTATES,
HOUSING AND
SUBDIVISIONS

Existing Conditions,
Issues and Concerns

Three of the principal objectives of the waterfront plan are: to preserve the existing general pattern of land use, to increase the amount of residential development on the shore, particularly in Stoney Creek, and to secure increased public access to the shore. These objectives can be largely met by applying wise planning policies to the estate properties in Oakville and Burlington and to the relatively open areas that consist of cottages and partly abandoned orchards and vineyards in Stoney Creek.

The estates on the north shore consist of 60 properties that are two acres or more in size; a few are larger than 25 acres. These properties generally contain expensive homes and landscaped gardens, and sometimes woodlots and creeks in a relatively natural state. There is increasing pressure on owners to redevelop these lands at higher densities, particularly in areas where a number of properties can be assembled into relatively large land holdings.

In Stoney Creek, there are about 1,000 acres of sparsely developed land between the shore and the Queen Elizabeth Way that will be increasingly subject to redevelopment pressures. The existing houses are generally on small waterfront lots and the quality ranges from make-shift and rundown cottages to substantial homes that are well-maintained. Between the shorefront houses and the Queen Elizabeth Way there are some neglected orchards and vineyards, open fields, scrub growth and wooded areas. The land is low and crossed by a number of shallow streams and drainage channels.

Proposed Future
Development

Most of the north shore estates should eventually be subdivided for low density housing to complement the existing low density development along the waterfront. The south shore should eventually be redeveloped for community parks and multiple density housing designed around inland water bodies, based on existing ponds, streams and low areas.

Proposals to permit multiple housing, on the north shore in particular, are strongly opposed by certain groups of citizens and by some public officials. They argue that:

- high waterfront buildings block waterfront access and views of the water from people living further inland;
- many buildings erected so far are architecturally unattractive and depress property values in the area;
- apartments and town-housing should be confined to locations near the expressway to minimize traffic problems and to retain waterfront land for open space.

On the other hand, apartments and other forms of multiple housing near the shore can provide an attractive living environment for people who wish to live near water. Not only are there panoramic views and cool summer air, but boating opportunities and waterfront parks are close at hand. In addition, multiple housing developments on the shore can be focal points and handsome sculptural features that add interest and identity to waterfront communities. And, perhaps most important, by allowing multiple housing developments at selected locations, municipalities can secure, through development agreements:

- more public shore and public access to the shore;
- assistance with shore protection.

For these reasons, we recommend that eight locations for multiple housing be designated and that rigorous planning controls be exercised over the developments.

Planning Policies

To obtain the benefits of redevelopment of the larger blocks of shoreland and to minimize the drawbacks, the following policies should be incorporated into regional and local plans, zoning by-laws, subdivision agreements, development agreements and site plan controls.

- When waterfront lands are redeveloped, re-zoned or subdivided, the regional and area municipalities have an opportunity to regain into public ownership, at no

capital cost, segments of the lakeshore that can eventually be joined into an almost continuous public shore. All subdivision design and site planning for residential areas, should therefore, contribute in the long term to establishing a relatively continuous public waterfront supported by and integrated system of access trails and footpaths.

- When a waterfront property is subdivided, redeveloped or rezoned, a public waterfront strip, at least fifty feet wide (measured from the 250 foot contour; design maximum water level) and extending the full width of the property, should be conveyed to the municipality together with suitable pedestrian access for residents living within 10 to 15 minutes walk.
- No building should be constructed within 100 feet of the design maximum water level of 250 feet, International Great Lakes Datum, (except for boat houses).
- No multi-storey residential building should be constructed within 150 feet of the design maximum water level; buildings higher than 100 feet should be set back from the maximum water level 50 feet plus the height of the building.
- Each subdivision plan and site plan should be reviewed in meetings attended by all affected municipal departments and the Conservation Authority.
- Each subdivision plan and site plan should be reviewed at public meetings of residents within 1/4 mile of the site.
- Site plan reviews should ensure: that buildings will enhance the architectural characteristics of the area; that buildings are designed and sited to allow clear views and easy flow of breezes between the water and inland neighbourhoods; that landscaping is of superior quality; and that pedestrian areas invite non-residents to pass through the development to the public shore.
- Subdivision agreements or development agreements should require waterfront developers to contribute to the cost of developing:

- the public shore
- the access paths
- any shore works needed for erosion control; (such levies may make it feasible to create island breakwaters offshore from multiple residential developments).
- The 50 foot public shore areas should be maintained by the Area Municipalities after they have been dedicated and landscaped by the developer to municipal requirements.
- The use of filled water lots for housing developments, or for open space associated with housing developments, should be subject to strict review in terms of:
 - shore protection policies and erosion control;
 - water quality policies;
 - ownership (One developer is known to have included in "coverage" calculations, filled water lots that he does not own. Such applications should not be approved).
- A municipal program of estate appraisal should be carried out to determine which sites have strategic importance or special value in the future. Estates with apparent potential for community parks or other community purposes should be identified immediately and arrangements made with the owners regarding options, bequests, or establishing municipal equity in the properties. When the estates have gone, the only remaining techniques for creating waterfront parks, or public waterfront access, will be purchase or expropriation.
- Developers who are not able to assemble shorefront lots easily, may wish to leave existing houses along the waterfront, and develop larger blocks of land behind a strip of shorefront housing. This situation should be avoided. Redevelopment plans should not be approved unless the developer has acquired land right to the shore, otherwise a narrow strip of low density housing will remain along the shore and future public access

and public shore can then be secured only through public purchase.

- . In Stoney Creek, a heavily planted and bermed buffer strip at least 200 feet wide should be maintained between housing and the Queen Elizabeth Way; (berms should be about 20 feet high).
- . Construction of channels and lagoons in the Stoney Creek multiple housing areas will be a special engineering problem and the water bodies will have to be carefully designed and operated to keep them attractive. To ensure good circulation and flushing of lagoon water, the hydraulic system should make maximum use of littoral drift and storm water runoff. Storm water storage ponds and weirs have been successfully used in similar developments elsewhere.

Recommendations:
Oakville

There are ten blocks of land on the Oakville waterfront that consist of large estates or clusters of estates (0.3, 0.5, 0.6, 0.8, 0.9, to 0.12, 0.15, 0.34, 0.35, 0.36 and 0.39) and there is one large institutional block, Appleby College, 0.37. All of these blocks will probably, sooner or later be considered for redevelopment. If at that time they are not required for any private or community purpose that would keep the lands and buildings in their present form, redevelopment plans should be approved, but only after strict reviews of site plans, architecture and landscaping proposals.

There will be a continuously increasing demand for multiple housing on the Oakville shore and a consequent pressure from owners and developers to redevelop shore-front properties. Large blocks of land will be under particularly strong pressure, but sites as small as 1½ acres have been used recently for apartments on the Burlington waterfront.

Because of the potential drawbacks associated with multiple housing including: shutting off views, reducing the flow of lake air, and possible traffic and servicing problems, multiple housing development should be restricted to two locations on the Oakville waterfront.

a) Oakville town centre area (0.25, 0.28). Some expansion toward the waterfront on the west side of Sixteen Mile Creek would be a reasonable complement to the proposed harbour and community park expansion (0.29);

b) Bronte town centre area 0.50. The land use pattern of multiple housing on the waterfront, is already established between Bronte Creek and Third Line (0.47 to 0.49). This should be allowed to continue on both sides of Bronte Creek (0.54, Map 2).

The quality of architecture and site-layouts for multiple housing in Bronte is, to date, far lower than is warranted in such a strategic location. Stricter control over site planning could lead to one of the most attractive living environments on the north shore. This location would also be suitable for the creation of off-shore islands or promontories for shore protection and recreation purposes. Fill from the construction of housing could be used for island construction providing there is suitable sea-wall protection.

Recommendations:
Burlington

There are nine large blocks of land in Burlington that may be expected, sooner or later, to be redeveloped for housing or recreation purposes.

Lakeshore Motel area (B.3), Top Hat Motel area (B.6), Shoreacres (B.12), Tuck Creek (B.14 to B.16), (B.26 to B.28), the Golf Club (B.39) and area B.56.

Shoreacres should be acquired as a community park. If it cannot be obtained, Tuck Creek area should be acquired as the best alternative. The remaining blocks should be appraised as to their potential for other community purposes. Options or agreements should be entered into if the properties may eventually be needed for some special community purposes. Otherwise redevelopment plans for housing should be considered.

In the forthcoming regional official plan, multiple housing near the waterfront should be confined to three locations:

- Elizabeth Gardens (B.1 to B.7)
- Central Burlington (B.26 to the QEW)
- Oakland Park Court Area (B.54 to B.57)

Tall buildings (more than three storeys) should not be permitted between Smith Avenue and Delaware Avenue (B.26 to B.28).

Both Elizabeth Gardens and Central Burlington are desirable locations for island construction to which developers should contribute fill and substantial portions of development costs.

To minimize the effects of possible increased traffic on Lakeshore Road due to new multiple residential developments, there must be improved east-west traffic alternatives further to the north, especially when Lakeshore Road is recommended as an integral part of the scenic route system.

Recommendations:
Dundas

There are three areas that are likely to be under pressure for change to housing or to new housing types in the near future in Dundas:

- north of York Road (D.4);
- the Dundas sanitary landfill area (D.9);
- central Dundas (D.14);

North of York Road should be developed at very low density in estate type lots.

The Dundas sanitary landfill area should be developed as a multiple housing area (providing York Road extension is actually built). However, since this area is adjacent to a regional open space area near the waterfront, rigorous architectural and site plan requirements should be imposed on the developers.

Multiple housing and commercial expansion should gradually replace industrial uses in downtown Dundas.

Recommendations:
Hamilton

There are three areas that should be considered for multiple housing near the Hamilton waterfront.

- C.N.R. Yards and industrial lands bounded roughly by Barton Street, Bay Street, the shore and Dundurn Castle grounds (H.10, H.11, H.12);
- The area bounded roughly by Bay Street, Guise Street, Eastwood Park, Mary Street and the C.N.R. (H.16);
- Near Dundurn Castle (H.7).

Site plans for redevelopment of these areas should give special attention to pedestrian connections to the waterfront for people living further inland.

Redevelopment at higher densities in the Dundurn Castle area should be co-ordinated with the possible Burlington Street extension, eventual removal of the C.N.R. yards and improved access to the Dundurn Castle grounds.

Recommendations:
Stoney Creek

The developable waterfront area north of the Queen Elizabeth Way is too narrow to permit economical servicing and viable community size unless the area is developed at medium to high density.

Three multiple residential areas incorporating extensive ponds, canals and lagoons should be developed. Each area should comprise one or more neighbourhoods with their own schools and local shops. They are:

- Teal Avenue to Millen Road area (S.2 to S.7)
- Dewitt road to McNeilly Road area (S.10 to S.17)
- Campview Road to Creanona Boulevard Area (S.21 to S.26)

Teal Avenue-Millen Road area is already planned in detail for multiple developments and preliminary approvals have been obtained. Hopefully the small water courses and ponds will be integrated into an open space system linking the neighbourhoods to the shore.

Dewitt Road-McNeilly Road area is accessible from Fruitland Road interchange, and development should be

encouraged that incorporates tourist commercial facilities near the interchange. This is also the location where a small-craft harbour should be established to provide a safe travel interval between proposed harbours at Confederation Park and Fifty Point Park. There is potential at this site for an inland harbour and perhaps a system of canals and ponds throughout the development. The development agreement for this area should ensure that public waterfront is secured and that public access to the harbour will be possible. The harbour should be developed as a joint public-private venture.

The Campview Road to Creanona Blvd. area contains scattered single family housing on large lots and it will be relatively difficult to assemble suitable building sites for multiple residences. However, it is unlikely that services and community facilities can be justified unless higher densities are achieved. The municipality should, therefore, encourage plans based on large sectors of this block being redeveloped at high density. The low ground level, and the possibility of developing a stable beach in this relatively sheltered section of coast, indicate that the public shorefront should be considerably wider than 50 feet. A 200 foot public shore is recommended.

The three proposed multiple housing areas with inland lagoons and canals will produce considerable excavated material that should be used for islands, or promontories that protect the shore and provide additional waterfront recreation space.

Implementation

Our recommendations with respect to estates, housing and subdivisions relate to official plan policies, zoning, subdivision controls and development agreements. Responsibilities for these matters are divided, by provincial legislation, between the Regional Municipalities and the Area Municipalities and we do not recommend any change in this distribution of responsibility.

The acts which created the Regional Municipalities in January 1974 require each Region to prepare an Official Plan by December 1976. The relevant recommendations in this report should be incorporated into these official plans. We suggest also, that planning should not stop at the water's edge; important planning decisions must be made with respect to water areas, especially in Hamilton Harbour and in proposed fish and wildlife areas. (See Chapters 7 and 13).

Our recommendations regarding conveyance of a 50 foot water-front ship to the municipality, building locations, subdivision regulations, design and development agreements are directed to the Area Municipalities who have jurisdiction in these matters. Current practices and regulations which are not in accordance with our recommendations should be amended as soon as possible.

Priorities

A number of subdivision plans have recently been approved in Oakville and Stoney Creek that have not provided adequately for public access to the shore. In these cases, an opportunity has been lost that will probably never recur. It can hardly be over-stated that the estates in Oakville and Burlington and the sparsely developed lands in Stoney Creek provide the best available opportunity for obtaining new public shore. Policies should be established immediately at provincial, regional and local levels to ensure that this opportunity is fully utilized.

Alternatives and Comments on Estates

The principal alternatives for the future of the north shore estates are:

- . keep them as they are;
- . subdivide them for low density housing;
- . convert them for public and semi-public use;
- . convert them for private club or restricted business use.

The future of a given site will have to be decided on the basis of the specific factors affecting the site; however, some general factors can be evaluated at this time to indicate the sort of analysis that should be carried out when a decision has to be made. The following table illustrates the approach:

RATING OF ALTERNATIVE USES				
EVALUATION CRITERIA	Keep estates as they are	Subdivide for low density housing	Obtain as public or semi- public space	Re-use as private club or business space
More public shore and shore access	D	B	A	C
Better integrated shore protection	C	B	A	C
Preservation of landscape, history, architecture	A	D	B	A
Low servicing costs to municipality (sewer, water)	A	C	B	A
Increased assessment	C	A	D	B
Minimum neighbour- hood objections to noise and litter	A	B	D	B
Minimum traffic problems	A	C	D	B
Minimum pressure on community services (schools, libraries, protection)	A	D	B	A
A: excellent potential		C: fair potential		
B: good potential		D: poor potential		

To make this approach work effectively, numerical values should be used for rating, and decisions should be made on the relative importance of each criterion.

Recommendations on Controversial Developments

There are on the Halton Wentworth Waterfront a number of developments proposed by private interests that are causing, or may cause, public controversy. Some of these developments are currently being reviewed by municipal councils and the Ontario Municipal Board. Other proposals have been approved, but may run into public objections at a later stage. The following table lists ten such controversial development proposals together with our recommendation as to future land use. In each instance, stringent site plan and design controls should be imposed by the Area Municipality prior to development approval. Guidelines for such controls are listed above under "Planning Policies".

Project	Location	Developer's Proposed Use	Our recommended Use
Wuthering Heights	051	multiple housing	recreation
Lakeshore Motel	B3	multiple housing	multiple housing
Top Hat Motel	B6	multiple housing	multiple housing
Anchorage	B32	commercial/ multiple housing	commercial/ multiple housing
Brant Inn	B34	commercial recreation/ accommodation	commercial recreation/ accommodation
Dundas	D9	multiple housing	multiple housing (if York Road is constructed)
Lax Development	H13	multiple housing	recreation, recreational harbour
Confederation Beach	S3	multiple housing	multiple housing
South Shore Estates	S6	multiple housing	multiple housing
Terrold Development	S13	multiple housing	multiple housing/ commercial/tourist commercial/marina

CHAPTER 9: PARKS AND WATERFRONT ACCESS

Introduction

The shore is an increasingly important environmental feature in the expanding urban development of Halton and Hamilton-Wentworth. During the next 30 years population is expected to double, from about 600,000 to over a million. This increase will put heavy pressure on existing open spaces and will create unprecedented demands for new open spaces in river valleys, hilly regions, woodland areas, lakes, ponds and streams.

Increasing leisure time, energy shortages and more even distribution of wealth will lead to more demand for opportunities for touring, walking, picnicing, camping, sunbathing, boating, viewing, scenic drives and interpretive areas, accommodation and tourist services.

The following sections describe a plan and implementation procedures for establishing the shore, the lake, the Harbour, the tributary valleys and the escarpment as an integrated and satisfying framework for recreation opportunities in the future urban environment.

Existing Conditions and Shore Capabilities

The north shore consists mainly of low bluffs, shingle beaches and sea walls along private properties. There is half a mile of sand beach at Coronation Park. The water is generally too cold for swimming and is frequently polluted by community sewage outfalls from the north shore communities and from Hamilton. Future plans for this area should emphasize the potentials for boating, shore walks and relatively passive family activities in existing and future waterfront parks.

The south shore is similar to the north shore, but is less well protected and is eroding rapidly in some places. There are no natural harbours and some minor sand beaches have been built by groynes constructed by private owners. Water on the south shores is warmer than on the north and less polluted, and there is better potential for swimming.

The Beach area consists of six miles of sand on the Lakeside and mainly fill on the Bayside. Because of the highway, it is likely that the Bayside will always have limited recreational accessibility except perhaps at the north end near Indian Creek where boating could be established.

The Lakeside of the Beach is the edge of a unique sand bar six miles long and broken only by the Burlington Canal. The water is generally too cold for swimming, but the beach is a superb walking and sunning area with panoramic views. However the recreational potential of the beach is limited by the presence of highways, a railway, hydro transmission lines, private residences, and air and water pollution, mainly from the Harbour.

The beach is strategically located for transportation and utility purposes and the long-term future should therefore provide for a skillful integration of transportation, utility and recreation functions.

The north shore of Hamilton Harbour consists of shingle or gravelly shore below low bluffs, except at the west end where the shore rises about fifty feet above the water. The principal capabilities of this shore are for boating, viewing, walking and family outings in community parks.

The west shore of Hamilton Harbour provides excellent vistas from Burlington Heights, but the shore, because of the railway, is relatively inaccessible.

The greatest opportunity for linking the Hamilton Harbour to the city occurs along Bay Street, between the C.N.R. yards and the Harbour Commissioners' dock. This area should be developed to provide increased public access to the shore from the downtown and to permit expanded recreational boating opportunities in the Harbour.

The south shore of the Harbour is heavily industrialized on land fill. Access to the shore in this area is presently almost impossible. The recreational future of this area should consist mainly of harbour tours and

plant tours. Vista points for viewing the industrial area should be established near the end of Hilliard Street, on the Bayside of the Beach, on the north shore of the harbour, and on Burlington Heights.

Cootes Paradise has been maintained by the Royal Botanical Gardens in a relatively natural state. The area is low and marshy towards Dundas and rises more steeply from the water towards Burlington Heights. The area is rich in woodland trails, wild flowers, birds, small animals, gardens and an arboretum. There is high capability for walking, nature lore, picnics, quiet water boating, sleigh riding, skating, iceboating, and fishing.

Related Recreation Potentials

The Escarpment: Two or three miles back of the shore, the Niagara Escarpment rises 300 to 500 feet and gives outstanding views over the Lake and shorefront development. Particularly impressive viewing locations are provided near Devil's Punch Bowl in Stoney Creek and along Mountain Avenue and Mountain Brow Boulevard in Hamilton. A good ski area has been established at Chedoke and a second area is being considered at King's Forest.

River Valleys: A number of river valleys have high potential for walking, nature lore, cross-country skiing and quiet water boating. At the same time these valleys could act as spines for establishing regional and community open space systems. The principal valleys with these potentials are:

Joshua's Creek, Sixteen Mile Creek (Oakville Creek), Twelve Mile Creek (Bronte Creek), Grindstone Creek, Spencer Creek, Redhill Creek and Stoney Creek.

Tourism: An estimated ten million tourists enter Ontario by car each year at Niagara. A large proportion of these travellers either pass through the Halton-Wentworth area, or might do so if the area's attractions were known to them. In addition, the Halton-Wentworth Waterfront lies on the main travel path of Ontario residents bound for the Niagara area. The Beach in particular, is strategically

located on this travel route and has a high potential for tourist development.

Points of Interest: A variety of current and historic points of interest in the area have the capability of attracting travellers and day trip groups off the Queen Elizabeth Way. Chapter 11 "Touring and Points of Interest" identifies a number of these attractions and identifies roads with scenic route potential.

Access to the Shore

Increasing population in Halton and Hamilton-Wentworth makes it essential that greater use be made of the waterfront as a major urban recreational resource. But the shore can fulfil its recreational capabilities only if there are greatly increased opportunities for people to get to the shore to enjoy waterfront activities.

Public Access: At present only 21% of the shore is accessible to the public.

In Hamilton the entire central part of the city is blocked from the shore by industrial development. Nevertheless the Hamilton-Dundas sector of the Waterfront has relatively more public waterfront (28%) than any other part of the Halton-Wentworth area. This public shore is mainly in Cootes Paradise (5 miles of shore) and Confederation Park (2 miles of shore).

The only public access to Stoney Creek shores is informal access at sixteen street-ends (roads that terminate at the water's edge). None of these locations are formally recognized as public access, and some have signs, posted by abutting owners, indicating that visitors are not wanted.

There is moderate public access to the Oakville shore at 13 undeveloped street-ends and a number of reasonably well-spaced parks and promenades. Twenty percent of the Oakville shore is now publicly accessible, but through eventual redevelopment of estate lands, there is potential to increase this access to over 70% of the shore.

In Burlington, public access is limited and poorly

distributed. The only public parks between Bronte Creek and Brant Street are two small parkettes squeezed between Lakeshore Road and eroding shore bluffs. In addition there are in this area eleven randomly spaced street ends. Between Brant Street and Woodland Cemetery (6 miles) the only shore access is at Spencer Smith Park, La Salle Park and at six street ends. About 14% of the Burlington shore is publicly accessible. For the near future, a target of 50% public shore should be adopted.

Semi-Public and Restricted Access: In addition to the 12½ miles of shore that are fully accessible to the public, there are 7 miles of shore owned by various public or semi-public bodies to which the public has qualified access. These areas include cemeteries, unfenced areas around Burlington Canal and the majority of the Lakeside of the Beach. About 12% of the shore has this semi-public character.

An additional 3½ miles of shore (5.7%) have restricted recreational access. That is, only club members or selected persons can gain easy access to the shore in these locations. Examples are The Royal Hamilton Yacht Club, Burlington Golf and Country Club, Oakville Club and Appleby College.

Planning Objectives

To provide for necessary waterfront access and recreational opportunities, we recommend the adoption of the following objectives.

1. Seek public ownership or easements strategically spaced along the entire shore to allow for:
 - (a) pedestrian access from each neighbourhood;
 - (b) community parks and regional parks for people who live beyond walking distance of the shore.
2. Establish a system of well spaced harbours for recreational boating.
3. Establish the Beach as a provincial/regional park and tourist attraction.
4. Establish strong, natural open-space links in selected stream valleys between the shore and the

escarpment for hiking, picnicing, and quiet-water boating.

5. Establish park transit linking to GO transit.
6. Establish scenic routes/touring routes based on attractive landscapes, views, look-outs, historic and architectural features, shopping, accommodation, camping opportunities (some of which may be in waterfront areas and some of which may be away from the shore).
7. Establish lake and harbour tours.

Planning Policies and Criteria

Specific planning policies and criteria for achieving some of these objectives are listed below. Others are included in chapters on "Touring and Points of Interest", "Recreational Harbours" and "Stream Valley Protection".

Public pedestrian access to the shore should be established at half mile intervals (at least), so that all persons within about $\frac{1}{2}$ mile of the shore will be within about ten minutes walk of shore that is open to the public.

Street-ends, creek mouths, promenades, community parks, and regional parks should be used to meet this requirement. (Land Use Concept, Map 2).

Street-end parks should eventually be established at the ends of all streets that terminate at the water's edge. They should be about 80 feet deep and as wide as the road allowance.

"Natural" creek-mouth parks should be established at the mouths of all streams.

Where creek-mouth parks are established, ownership or easements should be acquired along the valleys for walks or trails that lead to the lakefront.

Community parks should be established at intervals of about three miles, to provide primarily for waterfront

visitors within 15 to 20 minutes by car or transit. Community parks should be large enough to permit such activities as family picnics, boat launchings, and bathing; say 25 acres.

Regional waterfront parks should be established to provide for extensive recreation activities or uses such as camping, large marinas, recreational harbours, wildlife areas, hiking trails, amusement areas, and golf courses. Regional waterfront parks should, where-ever possible, be based on a major natural feature, such as a river valley, or a sand beach; and where possible they should be an integral part of the proposed Provincial Parkway Belt system.

The provincial Parkway Belts will establish broad open spaces that define the boundaries between communities. The principal uses that are expected to be permitted in the belts are public open space, transportation and utilities; but agriculture, private parks and selected industries may be permitted. When a waterfront park is established as the terminus of such a belt, every effort should be made to confine the uses to public and private open space and recreation.

Continuous Public Shore: As much as possible the entire shore should eventually be a continuous walking trail, accessible at half mile intervals (at least) — and connected to inland communities by walking trails and designated streets. If acquisition of property or securing of easements is too difficult at strategic locations, landfill frontage should be created. This may be in the form of islands, island breakwaters or shore fill.

Beach Area: The Beach should be gradually redeveloped as a major recreation area for community, regional and provincial use, in conjunction with transportation and utility corridor functions. Developments should include a mixture of active, passive, commercial, public, private, land-oriented, water-oriented, tourist-oriented, interpretive and educational opportunities. (See Chapter 12 "The Beach Area").

Camping: The availability of camping sites should be increased, especially at Confederation Park and in regional parks.

Recommendations

The following table summarizes our recommendations for increasing each type of recreation space.

Park Type	Existing	Recommended Target		Current deficit
		No. of Sites	Length or Area	
Street-End	3	50	NA	47 sites
Creek Mouth	2	13	NA	11 sites
Creek Trail	2700'	13	8,150'	5450'
Promenade	7220'	34	64,050'	56,830'
Community Park	121 ac.	11	336 ac.	215 ac.
Regional Park	1481 ac.	5	2,489 ac.	1008 ac.

These developments would increase public access to the shore from 11.1 miles (18.5% of shore) to 25.6 miles (42.7% of shore) not including existing or proposed breakwaters. (Proposed breakwaters would add about 4 miles of additional promenade).

Semi-public access would increase from 7.2 miles to 9.0 miles. Restricted access would be reduced from 3.4 miles to 2.2 miles.

(A complete list of proposed parks and waterfront access locations is included in Appendix 3).

Implementation

Remaining opportunities to reserve public shore are primarily on large blocks of land where development is likely to occur in the future. Planning authorities must act quickly to acquire lands and establish development controls that will ensure public access and use of the waterfront. Parks and waterfront access should be important elements in the new regional Official Plans to be completed by December, 1976.

Implementation should be seen as a long term program

particularly when it concerns acquisition of private homes.

Expropriation should be used only as a last resort.

Many residents will resist increased use of shore areas for parks or recreational harbours near their homes.

Large expenditures will be required to acquire and develop land and to prepare and implement development controls and design criteria. We estimate that \$66 million will be required to acquire, clear, landscape and fill needed areas other than the Beach; this does not include structures or harbours. To redevelop the Beach area, we estimate that \$54 million will be required for acquisition, clearance and basic landscaping.

With the exception of the Royal Botanical Gardens and Fifty Point Park, the formulation of parks policy, and the development and management of parks in the waterfront area has, in the past, been primarily the responsibility of the Area Municipalities. Beginning in January 1974, the Regional Municipalities must establish the general planning policies on parkland location and park types as part of general land use planning policies for the regions. Considerable assistance will be required from the Area Municipalities who should advise regional officials on the suitability of the "Land Use Concept", Map 2 as a basis for parks planning.

Until the Regions are well established, acquisition development and management of regional parks should be co-ordinated by the Conservation Authorities in close co-operation with the Area Municipalities (except the Royal Botanical Gardens and the Beach). The Conservation Authorities are well suited to carrying out interim co-ordination and acquisition of regional park areas because of their regional perspective and because of their access to regional and provincial funds. In the long term, each Regional Municipality should establish a Parks Authority to administer regional parks and regional recreation areas including recreational harbours (see also Chapter 10).

Community parks and street-end parks should generally be an Area Municipality responsibility.

Creek Valley parks and trails should be a divided responsibility between Conservation Authorities, Area Municipalities and Regions depending on the scale and function of the stream valley. Allocation of responsibility for stream valley parks should be co-ordinated with the Stream Valley Protection Plan, with fish and wildlife policies and with water quality policies.

Implementation
Techniques
for Specific
Types of Parks

Street-end parks should be constructed, maintained and controlled on existing road rights-of-way by Area Municipalities. Plans should be co-ordinated with shore protection works. The main problem with street-end parks is that there are likely to be objections from abutting owners. First installations should be at locations that will have minimum adverse effects on nearby owners. There should be effective screening from private yards. Masonry walls should be preferred. There should be no blocking of driveways and maintenance and control programs must be of high order. Littering and excessive noise by users should be minimized and pedestrian use should be emphasized.

Creek mouth parks and trails should be maintained in as natural a state as possible. Eventually all such parks should be integrated into larger parks that take on the character of their surroundings.

Promenades: About 64,000 feet (12 miles) of discontinuous promenade are proposed; 7,200 feet (10%) now exist.

80% of the proposed new promenades should be dedicated to area municipalities through development agreements made with subdividers or developers. The entire waterfront of each re-developed property should be dedicated for public purposes. Minimum width of promenades should be 50 feet, measured from the design maximum water level (250 feet I.G.L.D.) to the private property line.

20% of the proposed new promenade frontage can be provided via easements arranged with private owners and

cemetery owners.

In downtown Oakville between Thomas and Dunn Streets there are 700 feet of shore that should be acquired by the Conservation Authority and leased to Oakville for development and management.

Additional promenade lands may be acquired as part of shore protection works. Private owners who benefit from public investments in shore protection may wish to give public access along the shore in part payment for protection benefits.

Public promenades should be developed and managed by the Area Municipalities.

Where promenades are available via easements, the Area Municipalities should provide maintenance and control as may be agreed with the private owners.

Community Parks: 336 acres of community park are proposed between the waterfront and a line 1/4 of a mile inland; 121 acres already exist in the form of public parks.

98% of the new area (211 acres) should be purchased by the Conservation Authorities, then leased to the Area Municipalities for development and management. Design of the shore areas should be co-ordinated with shore protection works.

About 2% of the proposed new community park areas will have to be provided through shore easements from CNR and apartment owners in Oakville Harbour. Maintenance and control of these areas should be by the Area Municipalities or as may be agreed with the owners.

Regional Parks: The proposed regional parks should become integral parts of the provincial parkway belts and mini belts. They will consist partly of public park areas and partly of private recreation areas in association with other private development that is compatible with regional parks.

2489 acres of regional park/parkway are proposed within 1/4 mile of the shore; 1481 acres are now in public ownership (60%) and are mainly comprised of Cootes Paradise area and Fifty Point Conservation Area. The proposed additional 1008 acres consist mainly of new land at Joshua's Creek, Sheldon Creek and the Beach. This land should be added to the regional park/parkway system as follows:

	%
to remain private (primarily recreational)	20
to remain semi-private (CNR, CPR, MTC, buffer areas)	10
to be dedicated to the public via development agreements	2
to be acquired	60
to be developed on landfill	8
	<u>100%</u>

The ownership, development and management of the new regional parkway areas should be as follows:

Joshua's Creek: The recommended new land area should be acquired by the Halton Conservation Authority. Until a Regional Parks Authority is established, development and management should be carried out by the Area Municipality of Oakville and the Halton Conservation Authority.

Bronte Creek - Sheldon Creek: The recommended additional land may be acquired by a number of authorities, including: the Halton Conservation Authority, Regional Municipality, Area Municipality, and private groups. Planning should be co-ordinated by the Regional Municipality. Development and management of public areas should eventually be by the Regional Municipality of Halton.

Cootes Paradise Area: Proposed new wooded areas should be acquired and managed by the Royal Botanical Gardens. Lands along Desjardins canal should eventually be acquired by the Regional Municipality of Hamilton-Wentworth and perhaps managed by the Area Municipality of Dundas. The water area (Cootes Paradise) should be managed by the Royal Botanical Gardens as an integral part of the Royal Botanical Gardens. Some programs such as boating and skating could be managed by the Area Municipalities. Water quality, erosion and siltation control should be

under the general supervision of the Regional Municipality of Hamilton-Wentworth in consultation with the Hamilton Conservation Authority and the Ministry of the Environment.

Fifty Point Conservation Area: The recommended new public land should be acquired by the Hamilton Region Conservation Authority. The public lands, as far south as the Queen Elizabeth Way should be owned and managed by the Hamilton Conservation Authority. Integration of the area into a parkway belt should be the responsibility of the Regional Municipality of Hamilton-Wentworth.

The Beach: The development and management of the Beach area will be complex and very costly. Recommendations and implementation techniques for the Beach area described in Chapter 12. It is estimated that the cost of land acquisition, clearance and basic landscaping will be about \$54 million.

TABLE 1 - PARKS AND WATERFRONT ACCESS, COSTS AND ALLOCATION OF COSTS

Park Type	Total Cost	Main Responsibility	Principal Cost Distribution
Street-End	\$152,000	Area Municipalities	Oakville \$44,000 Burlington \$54,000 Stoney Creek \$54,000
Creek Mouths	\$ -0-	Halton Conservation Authority, Area Area Municipalities	Halton Cons. Auth: Costs included in promenades, community parks, regional parks
Creek Trails	\$361,000	Halton Conservation Authority (acquisition), Area Municipalities (development)	Halton Cons. Auth: \$252,000 Oakville \$ 82,000 Burlington \$ 27,000
Promenades	\$547,000	Conservation Authorities (acquisition), Area Municipalities (control, negotiate easements and development agreements), Developers (dedicate and landscape 80% of new promenades).	Halton Cons. Auth: \$336,000 Hamilton Cons. Auth: \$204,000 Estimated value of developer contributions of land and landscape (\$7 million)
Community Parks	\$42.7 million	Conservation Authorities (acquisition), Area Municipalities (development)	Halton Cons. Auth: \$8 million Hamilton Cons. Auth: \$33 million Oakville: \$126,000 Burlington: \$361,000 Hamilton: \$612,000 Stoney Creek: \$589,000
Regional Parks	\$77 Million	Province (acquisition clearance, basic landscaping, and negotiation re: CNR, HEPC, MTC, on the Beach) Conservation Authorities (acquisition and clearance re: Joshua's, Bronte, 50 Point; development and control at 50 Point). Regional Municipalities (co-ordinate planning; landscape Joshua's, Bronte) Royal Botanical Gardens (acquisition, development, and control at Cootes Paradise).	Province \$54 million Halton Cons. Auth. \$11.5 million Hamilton Cons. Auth. \$10.5 million Halton Region: \$1.4 million Royal Botanical Gardens \$145,000
			\$120.8 million

Priorities

The following is a list of priority items for implementing our parks and waterfront access recommendations:

- Amend existing official plans, zoning by-laws, subdivision agreements and other development controls to provide the framework for implementing the above recommendations.
- Adopt policies on the division of responsibility for acquisition, clearance, development, maintenance and control of waterfront parks as recommended above. Establish Regional Parks Authorities as soon as possible.
- Work with the province on parkway belt policy to ensure a strong inter-urban open space structure.
- Establish the first street-end parks at locations where there will be minimum conflict with abutting owners. Establish policies and designs for street-end parks that will ensure the successful acceptance of the first installations. Establish street-end parks in the higher density areas to provide immediate shore access to large numbers of people.
- Acquire land on the west side of Oakville Harbour for harbour expansion.
- Acquire land for a community park at the mouth of Shore-acres Creek.
- Acquire lands for the development of Hamilton Waterfront Park including the Lax property and some industrial and residential property.
- Begin studies for the eventual relocation of the CNR yards in Hamilton, and for connecting the Dundurn Castle grounds to the waterfront by a pedestrian bridge.
- Continue acquiring land for Cherry Beach Park.
- Begin acquiring land for Trillium Bay Park.

CHAPTER 10 - RECREATIONAL
HARBOURSExisting Conditions,
Problems and Opportunities

Within the study area there are approximately 800 mooring spaces for small craft.

<u>Location</u>	<u>Existing Boat Slips</u>	
Oakville	224	164 private and 60 public
Bronte	184	all of which are private
Hamilton Harbour	362	156 are in the Hamilton Harbour Commissioners Marina and 206 are private
	770	

In addition there are about 30 other moorings; scattered over the study area.

The growing demand for marina facilities for recreational boating has outstripped the supply. Discussions with boaters in the Halton-Wentworth area and estimates based on increases in population, leisure time and discretionary income, indicate a need for about seven times the existing small-craft docking space during the next 15 to 20 years. Not only is there too little docking area to satisfy current demands, but the distance between harbours is too great for safety. About five miles between harbours is desirable.

Outside the area, the nearest harbours are at Grimsby and Port Credit. Both harbours are ten to fifteen miles from any harbour in the Halton-Wentworth area. This distance is too great to permit safe long-distance boating for the majority of boaters.

For the boater who keeps his boat at home and brings it to the shore on a trailer, the only public launching ramps in the area are at Oakville Harbour, Bronte Harbour, and Spencer Smith Park. At least three times as many ramps, spaced at three to five mile intervals would be a reasonable planning target for the next 15 to 20 years.

Planning Objectives
and Policies

We recommend that the following list of targets be adopted as the basis for recreational harbour planning in Halton-Wentworth:

- . Provide a system of well-spaced recreational harbours along the entire lakefront and in Hamilton Harbour.

- Strive for five mile spacing between harbours. Begin the system at Joshua's Creek and Fifty Point Park to create an integrated system with the adjacent Peel and Niagara Waterfronts. Such a system would be part of a ninety-mile chain of recreational harbours, safely spaced, from Grimsby to Ajax.
- Incorporate into the system the existing harbours at Oakville, Bronte and Hamilton.
- Establish public launching ramps at each recreational harbour and at intervening large parks.
- Strive to provide at each marina, facilities for public, private and semi-private purposes.
- In general, the marinas should be located in a regional or community park in order to maximize investments through multiple use of public lands and facilities. The larger marinas should be located within a few minutes of stores, restaurants, banks, recreation opportunities and fire fighting equipment, municipal sewers should be available for pump-out facilities.
- Marina sites should be publicly owned, but part of each site should be made available on long term leases to private clubs. If a marina site at one of the proposed locations (Map 2) is developed by private investment prior to public work, arrangements should be made with developers to allow for immediate public use of part of the facilities, and the design should allow for later expansion to include the number of slips recommended in the following table.

Proposed Marina Location	Existing Slips	Proposed Slips	Proposed New Slips
1. Joshua's Creek (O.1)	0	600	600
2. Oakville (O.27)	224	824	600
3. Bronte (O.51)	184	634	450
4. Shoreacres (B.12)	0	150	150
5. Spencer Smith Park (B.33)	0	600	600
6. Burlington Harbour (B.42)	0	750	750
7. LaSalle Park (B.52)	0	150	150
8. Hamilton Harbour (H.13 & H.14)	362	1112	750
9. Confederation Park (H.46)	0	450	450
10. Fruitland (S.13)	0	300	300
11. Fifty Point (S.27)	0	300	300
TOTALS	770	5870	5100

Wherever possible, harbour breakwaters should be constructed in the form of island or landscaped promontories that are accessible on foot from the mainland. Feasibility studies on island development should be carried out for the following locations: Joshua's Creek, Oakville, Bronte, Shoreacres, Spencer Smith, Confederation Park and Fifty Point.

Most of the new facilities will have to be constructed out into the lake because the natural harbour areas within creek mouths are essentially fully developed. We estimate that less than 100 slips could be produced by renovating existing harbours. Extensive breakwater construction will therefore be required to create the recommended new harbour space of about 170 acres of water for 5,100 new slips. About 210 acres of additional land will be required to provide suitable land facilities for club houses, parking, landscaping, storage and repairs. (Space estimate are based on 30 berths per acre, and land area = $1\frac{1}{4}$ times water area.)

Costs

The estimate total cost of the required new breakwater, berths, landscaping, servicing, and buildings is about \$20.5 million.

The construction of island-breakwaters at harbour locations would increase the costs to about \$30 million depending on the availability of fill.

Implementation

Recreational harbours are parks in the water, and each proposed harbour should be an integral part of the regional system of recreation facilities. We therefore recommend that recreational harbour policy and planning be a responsibility of the Regional Municipalities. The Regional Municipalities should acquire the necessary shore lands, and construct and maintain the harbours. Selected land and water areas should be leased to the Area Municipalities and private clubs for the construction and operation of certain local and club facilities (buildings, docks and moorings). These facilities should be owned by the Area Municipalities and clubs, but should be constructed on leased land.

At present, no agency has responsibility for co-ordinating harbour policy on a regional scale. The Federal Government is currently involved in dredging and may participate in financing some small harbours, but federal policies are under review. Land developments, moorings, and launching areas are now provided by private clubs and Area Municipalities with little concern being given to regional scale harbour functions or to environmental impacts. Until the Regional Municipalities are in a position to accept policy and administration responsibilities for recreational harbours, the Conservation Authorities should act for them on an interim basis.

In the Hamilton Harbour, proposed recreational harbour development should be planned and operated in consultation with the Hamilton Harbour Commissioners in order to avoid conflicts with commercial shipping movements.

The overall distribution of costs for recreational harbour development should work out to about:

80% Regional and Area Municipalities (\$16.4 million) and
20% private clubs (\$4.1 million)

In the early stages of this program, it will probably be necessary for the Conservation Authorities to participate substantially in land acquisition related to harbour development.

Recreational harbour expansion should be related to population distribution. Priority should be given to expansion of facilities at Oakville Harbour, Bronte Harbour, Hamilton Waterfront Park, and Burlington (Bayside). Development of the proposed chain of harbours at five mile intervals should be phased over the next 15 to 20 years.

CHAPTER 11: TOURING AND POINTS OF INTEREST

Introduction

This chapter presents a concept for preserving locations, structures and natural features of historic importance through the establishment of touring routes for local visitors and visitors from far away.

More than 140 significant geological, landscape, historical, architectural and cultural features have been identified and analysed (Data Bank Report 12.01 pgs. 51 to 65) and grouped into ten interest clusters or nodes. It is recommended that each node be joined by a touring corridor and that specific routes be identified within each corridor. Eventually the system should be developed as an important component of the regional economic base.

Existing Conditions and Opportunities

The existing significant attractions of the area are located in ten defineable interest clusters or nodes as follows (Figure 10):

1. Oakville Harbour
2. Bronte
3. Burlington City Centre
4. Burlington Beach, Canal Area
5. Aldershot
6. Royal Botanical Gardens
7. Burlington Heights
8. Hamilton Central Area
9. Dundas
10. Stoney Creek Village

The existing attractions and historic background of each cluster may be summarized as follows:

1. Oakville Harbour

- Present - small craft harbour, creek and treed ravine
- interesting main street with curiosity shops
 - 'quaint', old town containing many historic buildings with plaques (private) and a pioneer museum (26 buildings altogether)

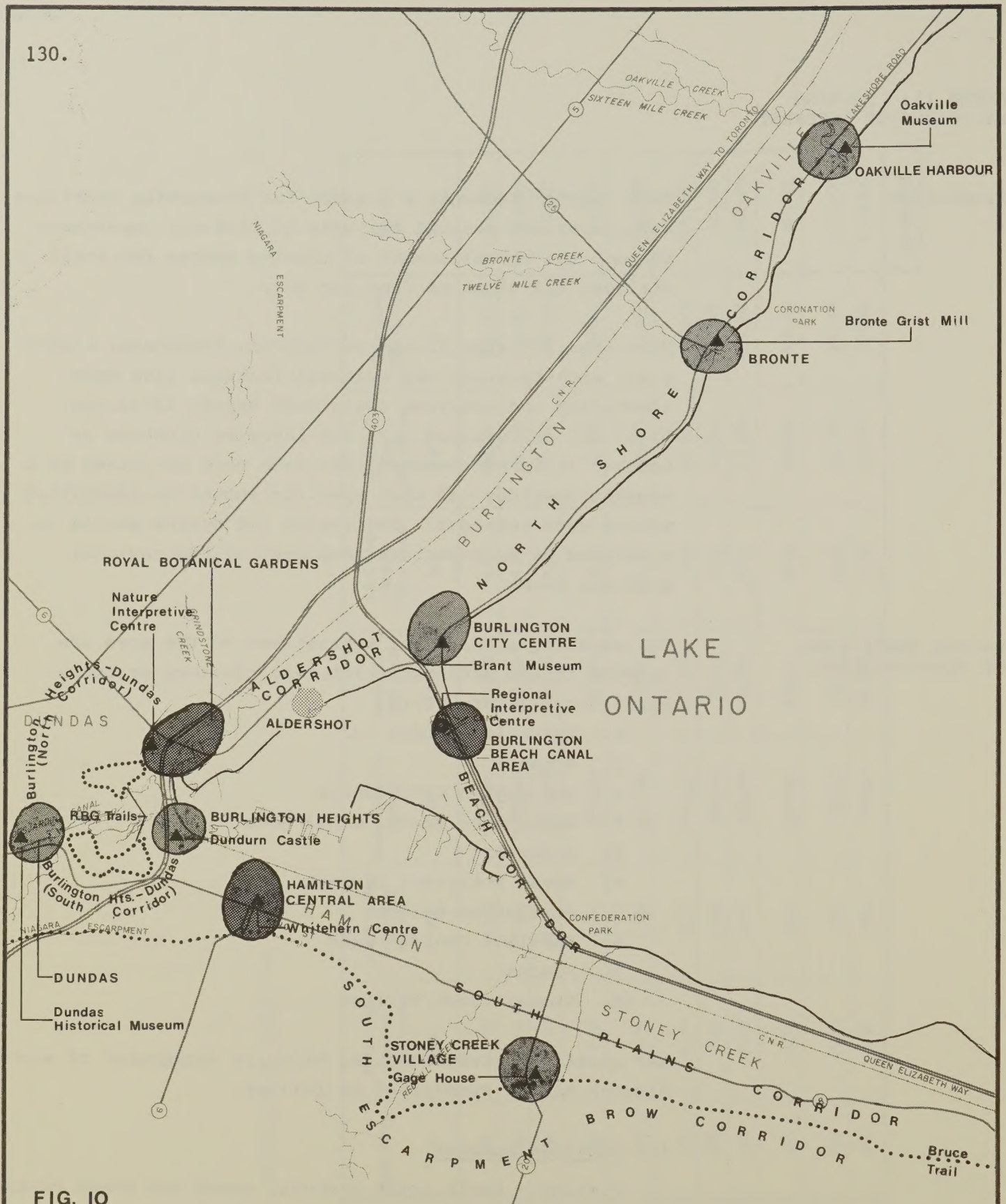


FIG. 10

LEGEND

PRIMARY NODE

SECONDARY NODE

TERTIARY NODE

INTERPRETIVE CENTRE - REGIONAL

" " LOCAL

PEDESTRIAN TRAIL



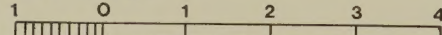
TOUR ROUTE CONCEPT

THE HALTON-WENTWORTH WATERFRONT STUDY

Project
Planning
Assoc.
Ltd.

ACRES

Scale in miles



- Past
- trading and shipbuilding centre begun c.1828
 - wheat from Halton County was stored and milled (1820-1865), and shipped to Montreal and overseas
 - square timber and lumber trade from 1840
 - shipping and trading declined with by-passing by railway in 1856

2. Bronte

- Present
- small craft harbour
 - attractive creek with marsh and ravine

- Past
- began as mill and agricultural centre c.1830 and soon became an active harbour and trading town
 - shipbuilding 1850-1870
 - fishing industry 1850-1915
 - shipping and trading declined with coming of railway, 1856

3. Burlington City Centre

- Present
- current features are limited except Brant Museum and approximately 10 historic buildings (no plaques)
 - plentiful shopping and restaurant facilities

- Past
- original landowner was Joseph Brant who was deeded a 3,450 acre tract of land c.1790 as payment for his war services
 - when pioneers settled on Brant's tract c.1812 agriculture became the first important activity
 - shipping wharves and mills grew up at Brant Street (Wellington Street) and Guelph Line (Port Nelson) c.1830
 - wheat/flour/timber trade/shipbuilding centre of the 1850's
 - important agricultural area especially fruit and vegetables; canning industry began c.1870.
 - 1st electric radial streetcar connecting Hamilton across the Beach through Burlington to Oakville (1898-1929)

4. Burlington Beach Canal Area

- Present
- a visually significant area with Skyway Bridge, lift bridge, and views of steel refineries in Hamilton Harbour, the Niagara Escarpment and Lake Ontario.

- the sand bar created by Lake Ontario is the largest in the Great Lakes system; it is a visual and geographic focus in the study area.
 - site of Canada Centre for Inland Waters
 - small public beach, some smelt fishing and birds
 - recreational boating is of visual interest
 - small amusement area south of canal
- Past
- important fishing and hunting area in early 1800's
 - strategic military communication link and line of defense in War of 1812
 - Burlington Beach Canal (1832) was vital to establishing the dominance of Hamilton as a centre of trade and industry
 - Railroad laid across Beach in 1876 ended use of the Beach as pastoral retreat. Beach became busy recreation resort with beach hotels, cottages, moonlight and daytime lake cruises, and regattas
 - Electric Radial Railway was laid across the Beach in 1898; overcrowding began; with the coming of the automobile c.1915 overcrowding and neglect became serious

5. Aldershot

- Present - LaSalle Park and lookout area
- Past
- site of Sieur de LaSalle's landing in Burlington Bay in 1669
 - pioneer settlement on fertile Lake Iroquois plain, later developed as market garden centre (c.1900)
 - early activity was milling and shipping wheat c.1828, later Brown's wharf, at LaSalle Park, became important shipping centre for Aldershot agriculture and Waterdown goods and refueling point for lake steamers
 - from 1912-1930's Wabasso Park (now LaSalle Park) became a major amusement and picnicking location with ferry links around the bay and lake

6. Royal Botanical Gardens

- Present - natural areas, trails, ponds, ornamental gardens, and a wildlife marsh of international significance

- nature interpretive centre, and observation posts

Past

- part of the area is built on the Lake Iroquois Gravel Bar (Burlington Heights), an important military site
- incorporates the remnants of the original drainage outlet from Cootes Paradise to Hamilton Harbour.

7. Burlington Heights

Present - parks and cemetery from which there are good views of Hamilton Harbour and Cootes Paradise

- Dundurn Castle, the restored estate of a prominent 1830's Hamiltonian, Sir Alan MacNab, is a regional attraction with pleasant dining rooms and summer concerts

Past

- Key military base in war of 1812
- earliest railway corridor to Hamilton (1854) assisted the city in its early rise to trading dominance in the area.

8. Hamilton Central Area

Present - significant harbour and largest port on the Seaway

- 3rd largest city in Ontario
- site of major iron and steel industries, including refining, wire and heavy machinery, 3rd largest industrial city in Canada
- location of major University, medical school, and planetarium
- art gallery and active downtown shopping and entertainment spots
- many examples of historic architecture (29)
- most of the city is cradled between the harbour and the escarpment, from which the city, harbour, Lake Ontario and the surrounding area can be magnificently viewed

Past

- on the Lake Iroquois plain which was originally settled and farmed c.1800
- early trade was similar to the other settlements with wheat and timber dominating
- Hamilton early became an administrative

centre (of Gore District 1816) and marketing centre

- the existence of the harbour via the Burlington Canal (1832) and the coming of the railroad (1854) gave Hamilton an important trade advantage over its competitor, Dundas, and its manufacturing sector began to grow
- the steel industry concentrated in Hamilton, (c.1870?) because of its proximity to the ore fields of the Midwestern U.S., its ready supply of flux, water, limestone, and coal, and its large natural harbour near the Welland Canal

9. Dundas

- Present - pleasant town setting, nestled in a valley and rimmed by the escarpment on both sides
- remains of early shipping canal (Desjardins Canal) and mills on King Street (potential for recreation/tourism).
- Past - Dundas Valley first settled c.1770; earliest activities farming and milling on Spencer Creek
- key location on Governor Simcoe's early military road (York to London) c.1793
 - became a busy trade and shipping centre for the farmland to the west from 1800 to c.1840
 - port was expanded with construction of Desjardins Canal (1837) and using the natural channel around Burlington Heights
 - shipping declined with construction of the railroad to Hamilton in 1854 and with increased competition from the port of Hamilton

10. Stoney Creek Village

- Present - Battlefield Monument and the Gage House museum in Battlefield Park
- the town is situated on the Lake Iroquois shore at the base of the Niagara Escarpment.
- Past - site of turning point in War of 1812, the Battle of Stoney Creek, where the American Army was prevented from moving north to capture the last British stronghold at Burlington Heights. The Americans returned to the U.S. after the battle.

Corridors Between Interest Clusters

A visitor's full enjoyment of the 10 interest clusters would be greatly enhanced by sensitive treatment of the travel corridors between clusters. Each corridor should have a distinctive character based on existing aesthetic, historic, and functional characteristics. The 7 corridors connecting the interest clusters are:

1. North Shore Corridor (Joshua's Creek to Burlington Centre)
2. Aldershot Corridor (Burlington City Centre to Burlington Heights)
3. Burlington Heights to Dundas, North and South Corridors
4. South Escarpment Brow Corridor (Dundas to Fifty Point Road)
5. South Plains Corridor (below the escarpment from Burlington Heights to Fifty Point Road)
6. Beach Corridor (Burlington City Centre to Stoney Creek Village)
7. Waterway Corridor (Lake Ontario and Hamilton Harbour)

The general characteristics of these corridors are:

1. North Shore Corridor (Joshua's Creek to Burlington):

There are a number of well-treed, deep ravines intersecting this corridor which lies partly on the Iroquois Plain. Lakeshore Road is the only continuous route between the 'interest clusters' of Oakville, Bronte and Burlington. It is a very pleasant road often following the curves of the lake shore and lined with mature trees and rambling estates. It is however, a high speed, high volume facility for local and regional business and shopping traffic.

Lakeshore Road and the QEW were the original Indian Trails in the corridor. Between 1840 both Lakeshore Road and the QEW (originally the Middle Road) were used as coach routes, first on a corduroy (log) and later a gravel base. By 1904 an electric radial railway was laid along New Street from Burlington to Oakville and promoted the development of waterfront land for cottaging. When automobiles were introduced to the area and the Lakeshore Road was paved in 1917, waterfront estates quickly dotted the entire lakeshore.

2. Aldershot Corridor (Burlington City Centre to Burlington Heights):

This corridor was, until recently, a rich agricultural and market gardening area on the old Iroquois Plain. North Shore Blvd. East is a pleasant drive with a passing view of Hamilton Harbour and access to LaSalle Park with its recreational and lookout facilities. Plains Road passes through an unattractive commercial area. However, there is car access into Holy Sepulchre and Woodland Cemeteries and pedestrian trails to Carroll's Pt. from which the harbour can be viewed. Valley Inn Road, Snake Road and Spring Garden Road are very scenic and afford access to the Royal Botanical Gardens.

3. Burlington Heights to Dundas, North and South Corridors:

There are two links to Dundas from Burlington Heights. The north corridor along the Escarpment Brow gives access to the Royal Botanical Gardens, trails around Cootes Paradise, the Rock Chapel Sanctuary, and the Bruce Trail. (King Street connects Dundas to scenic Webster's Falls and to the Crook's Hollow Historical Area to the north west). The south corridor from Burlington Heights to Dundas is south of Coote's Paradise and gives access to pedestrian trails and observation towers along the marsh, and to the MacMaster University campus. From this corridor there is a connection to Ancaster Valley and the mineral springs to the west.

4. South Escarpment Brow Corridor (Dundas to Fifty Point Road):

Along this route there are a number of fine lookouts over Hamilton and the Iroquois Plain. Significant features are Albion and Buttermilk Falls, Devil's Punchbowl and the Bruce Trail which roughly follows the edge of the Escarpment. This route includes parts of an Indian Trail (Mohawk Road) which led from Lake Ontario, along the Redhill Creek Valley and

northwest to the Grand River.

5. South Plains Corridor (below the Escarpment from Burlington Heights to Fifty Point Road):

This route consists mainly of city arterial roads which lack adequate landscaping for a touring route, except in the Gage Park Area.

From Stoney Creek to 50 Point Road, a number of old orchards and vineyards line the roads.

This Corridor contains an old Indian Trail that became an 1812 military route along the ancient Lake Iroquois shoreline at the base of the escarpment.

6. Beach Corridor (Burlington City Centre to Stoney Creek Village):

This corridor is flat and lacks vegetation but provides a clear view of Hamilton Harbour, the industries, Lake Ontario and the Niagara Escarpment. There is an active wildlife marsh close to the mouth of the Redhill Creek. This corridor contains the most extensive sand beaches in the area and a campground at Grays Road.

7. Waterway Corridor (Lake Ontario and Hamilton Harbour):

At present there are no cruise or ferry facilities operating in the area. A close-up view of Hamilton's industrial complex and harbour can only be obtained from the water. A waterway tour system could link points of interest on Lake Ontario and Hamilton Harbour and might be extended to include Toronto, Niagara-on-the-Lake and Queenston.

Policies and Recommendations

A Scenic Route System should be established based on the 10 'interest clusters' (nodes) and the seven corridors described above.

The 10 nodes should be classified as primary, secondary or tertiary according to the significance and range of attractions at each node. A recommended classification

is shown in the following table.

NODE	CLASSIFICATION	INTERPRETIVE CENTRE RECOMMENDATIONS
Oakville Harbour	secondary	expand existing Oakville Historical Museum, (base of Thomas Street)
Bronte	secondary	purchase and restore Bronte Grist Mill, (80 Bronte Road)
Burlington Town Centre	secondary	expand existing Brant museum
Aldershot	tertiary	-----
Royal Botanical Gardens	primary	expand existing nature interpretive centre (off Guelph Stone Road)
Dundas	secondary	expand existing Dundas Historical Museum (139 Park Street West)
Burlington Heights	secondary	expand information at Dundurn Castle
Hamilton Central Area	primary	develop "Whitehern" (Jackson & MacNab Street)
Stoney Creek Village	secondary	expand Gage House with a military emphasis
Burlington Beach Canal Area	primary	build major environmental, interpretive centre

A local interpretive centre should be established in each of the primary and secondary nodes to inform visitors about the historic and current features in each node. Each interpretive centre should have information about the other centres, about the scenic route system as a whole, and about nearby recreational facilities.

A central interpretive centre should be located on the Beach because the Beach is a visually dominant location and a focal area for waterfront travel.

Interpretive centres should be located on, or immediately adjacent to, scenic routes in order to give visitors the best possible access to information about the area.

Specific routes should be identified within each corridor to connect all nodes in the system. Possible routes in

each corridor are listed in the following table. When detailed route selection is being carried out, consideration should be given to bicycle connections between points of interest.

CORRIDOR	POSSIBLE ROUTES
North Shore Corridor	. Lakeshore Road
Aldershot Corridor	. North Shore Blvd. E., LaSalle Park Road, Plains Rd., York Blvd. . Spring Gardens Rd., and Valley Inn Road, from Plains Rd. to York Blvd. . Snake Road from Spring Gardens Road through RBG grounds.
Burlington Heights-Dundas	
a) North Corridor	. Hamilton and Guelph Stone Rd., Patterson Rd., Rock Chapel Rd., Sydenham Rd. . York Road from Hamilton and Guelph Stone Rd. north to Patterson Rd. or south to Dundas.
b) South Corridor	. York Blvd. (Highway #2), Dundurn St., Main Street. . King Street from Dundurn St. to Dundas
South Escarpment Brow Corridor	. Highway 2, Mohawk Rd. and other escarpment brow roads from Upper Morning Road to Mount Albion, Ridge Rd. to Fifty Pt. Road. . Old Ancaster Rd. to Mohawk Rd.
South Plains Corridor	. both Main St. and King St. between Dundurn St. and the Delta. . Main St. or King St. from Delta to Fifty Point Road
Beach Corridor	. Beach Boul., Van Wagner's Beach Road, Hwy. #20 . Lake and Mountain Avenues from Van Wagner's Beach Road to Stoney Creek

Most of the roads that will be required for the scenic route system were originally intended primarily for local and regional traffic. The introduction of a scenic route system may cause conflicts between slow speed recreational travel and higher speed business and shopping travel. These conflicts can be minimized by classifying scenic roads as:

- a) Scenic Arterial Roads, and
- b) Scenic By-ways

Scenic Arterial roads would give priority to business traffic movement, but would provide scenic views and have attractive roadsides. To achieve this, development adjacent to the roads should be subject to special requirements regarding landscape and building design. To maintain adequate traffic movement on these roads, there should be frequent opportunities for touring vehicles to pull off and stop at parks and points of interest. In addition, efforts should be made to develop alternative, parallel arterial roads to help reduce traffic congestion.

Scenic By-ways should be low speed, low volume facilities and may be winding and tree-lined. Stopping opportunities at vistas or points of interest should be frequent and parking should be provided. Parking areas should be located at some distance from natural or historic areas so that traffic noises will not detract from the enjoyment of an attraction.

There should be adequate connections between vehicular routes and pedestrian paths such as the Royal Botanical Gardens trails, and the Bruce Trail. Bicycle paths and footpaths should be included where possible, in the right-of-way of Scenic By-ways.

Distinctive signs should be posted along all roads in the scenic route system.

The proposed tour route concept would be an important functional link in the provincial tourism network, and would provide important regional and local recreation

opportunities.

We believe that the responsibility for developing the proposed system and facilities must be shared by provincial, regional and area levels of government as well as private enterprise. Initial policy meetings should be convened by the Ontario Ministry of Tourism and specific aspects of the program should be undertaken as shown in the following table.

TABLE 3: TOURING AND POINTS OF INTEREST, IMPLEMENTATION

COMPONENT	TASK	RESPONSIBILITY	
		X Principal Responsibility	O Supporting Role
POLICY	- initiation of programme, definition of priorities, setting overall concept and policies	X Province of Ontario	O Regional Government, Historical Societies, Royal Botanical Gardens
	- identification of specific routes		
	- development of regional system of graphics		
	- development controls for roadside development	X Regional and Area Municipalities	
PLANNING/DEVELOPMENT MANAGEMENT	- regional interpretive centre on the Beach	X Provincial Government	O Regional Governments
	- co-ordination of information & setting up of local interpretive programmes	X historical societies, RBG	O Regional and Area Municipalities and Provincial Government
	- building new local interpretive centres or modifying existing buildings; maintenance	X Area Municipalities	O historical societies, RBG and the Province
	- planning, development and maintenance of specific land routes, access lanes, road-side stops, access to points of interest, connections to pedestrian trails, landscaping and installation of signage.	X Regional and Area Municipalities	O Province, historical societies and RBG
WATERWAY SYSTEM	- develop and operate	O private enterprise	
		OR	O Area Municipalities or Province - if waterway system is required to supplement public transportation system

Costs

Costs of the proposed scenic route system can only be roughly estimated at this stage. The estimated total length of the overland road system is about 100 miles. About 40% (40 miles) is in Halton Region and 60% (60 miles) is in Hamilton-Wentworth Region.

Total estimated cost for completion of the scenic route system is about \$10.7 million of which \$10 million would be required for the planning and construction of the regional interpretive centre on the Beach.

The remaining \$700,000 includes installation of signs, construction of laybys and lookout stops, landscaping and the expansion and development of eight local interpretive centres (including the acquisition and restoration of the Bronte site). For preliminary estimating, we suggest that the division of these costs be Halton Region (\$300,000) and Hamilton Wentworth Region (\$400,000).

If land for laybys must be purchased, costs may increase by about \$50,000.

CHAPTER 12: THE BEACH AREA

Existing Conditions

The Hamilton-Burlington Beach is a unique and strategically located feature in the area and should be developed, conserved and enhanced in a manner that utilizes its natural resource capability and that yields the greatest possible benefits to recreation, the economy and the environment.

- It is now a major transportation route that provides access between Hamilton and Burlington and forms an important link in the regional road network around the Golden Horseshoe.
- It is a natural breakwater and provides significant protection for Hamilton Harbour.
- It is an essential route for major electrical transmission lines, oil pipeline and regional underground telephone cables.
- It has major potential as a recreation area, particularly for beach activities, for swimming, boating, fishing and for viewing the steel plants and harbour activities. However, poor air and water quality and highway noise severely limit this potential.
- It is a principal tourist route between Niagara and central Ontario.

The recreation and transportation potentials of the Beach were recognized during early settlement of the area. During the 19th century, the Beach was transformed from a pastoral environment into a lively and colourful resort. It remained primarily a recreational area until the post-war industrial boom of the 1920's, when emphasis shifted towards transportation, utilities and housing.

This transformation began in the late 19th century. When the railway and later the electric radial were laid across the Beach, improving access to the Beach from Hamilton and the North Shore. With the paving of the Beach Highway by 1923, the resort era of the Beach was at an end. Summer residences were converted to year-round use without community sewers and utility lines were constructed. A major thoroughfare, the QEW, was completed from Toronto to Niagara across the Beach by 1956 and the Burlington Skyway opened in 1958.

At the same time, the steel works along Hamilton Harbour had expanded and industrial smoke and fumes decreased the liveability of the Beach, particularly in the south part that lies in the path of the prevailing winds.

Increased sewage outfall from Hamilton, Burlington, and Dundas and increasing use of the Harbour for disposal of industrial wastes have caused the bay and the lake, once prime recreational attractions of the area, to become generally unsuitable for swimming or bathing. Recently, high water levels have caused flooding and backing up of septic tanks. Taken together, the problems of the Beach have now reached critical proportions and new planning guidelines are urgently required.

Planning Objectives

The future of the Beach should be based on:

- reclaiming the area as a major recreation resource for local, regional and provincial purposes;
- developing efficient and environmentally acceptable facilities for transportation and utilities.

Specific Recommendations

Queen Elizabeth Way on the Beach: We endorse the proposals of the Ministry of Transport and Communications to reconstruct the Queen Elizabeth Way as a tunnel under the Burlington Canal. Further, we believe that the proposed expressway should be constructed along the bayside of the isthmus, partially on fill, if necessary, in order to minimize the air and noise pollution effects on future recreation uses on the lakeside. Substantial berming and planting should be placed along the east side of the proposed expressway.

Removal of the existing skyway after the tunnel is complete, will create additional land for recreational purposes.

Interchanges and access to the Beach area should continue to be primarily from interchanges at Highway 2 and Highway 20, but care should be taken to preserve the Redhill Creek marsh (H33).

CNR Line on the Beach: The CNR Beach subdivision should be removed as soon as possible, in order to recapture the unique recreation and aesthetic potentials of the Beach area. This rail line now serves one industrial plant (Lang's Food) and the owners will have to be compensated in some way for loss of rail access; the industry may have to be purchased or moved to a more suitable location.

Hydro Transmission Lines: The Ontario Hydro-Electric Power Commission should be given every encouragement to relocate all aerial transmission lines into underground conduits that do not interfere with the visual attractiveness of the area. Reconstruction of the Queen Elizabeth Way offers an opportunity to incorporate underground conduits into the highway right of way.

Development Plan: A long-range development plan for the Beach should be prepared as soon as possible. The plan should include the Beach isthmus from approximately Greenwood Drive/Lockhart Road in Burlington (B45) to Teal Avenue in Stoney Creek (S2), an area of about 1600 acres.

The general features of the plan should be:

- an expanded Queen Elizabeth Way on the bayside of the Beach, with a portion tunnelled under the canal and the remainder screened by berms and landscaping;
- relocation of hydro transmission lines into underground conduits;

- eventual removal of all housing to create a major recreation area for active and passive purposes on the lakeside of the Beach; this development would eventually include a wide variety of public and private recreation facilities for accommodation, entertainment, boating, swimming, fishing, viewing and hiking;
- development of a major interpretive centre near the Burlington Canal.

A general concept for the Beach Area is shown on Map 2.

Removal of Housing: There are about nine hundred homes on the beach, over one hundred of which are on CNR land. These properties should be acquired gradually in public ownership as properties come on the market. All buildings should be eventually cleared, except those buildings that are found to be of historic or architectural merit.

Commercial Recreation: As air and water pollution problems are overcome, (via Air and Water Quality Policies) the Beach will gain renewed potential for regional tourist-commercial recreation. Water-oriented hotel developments would be appropriate at the Brant Inn site (B34) and north of the Canada Centre for Inland Waters (B41). Both developments would complement the proposed public harbours at Indian Creek and Spencer Smith Park.

A Tivoli Gardens-La Ronde type of development should be developed at the site of the present amusement area on the south side of the Canal (H36). An alternative location for this development would be at Confederation Park in association with the proposed recreation harbour (H46).

Interpretive Centre: An Interpretive Centre for the Environment should be constructed on the bayside of the beach strip (H36). It should be designed to appeal to local, regional and international visitors and should give people a strong sense of identity

with the historic forces that have shaped the present environment. Subjects that should be emphasized include:

- historical geology of the lower lakes and the escarpment;
- early shipping and milling industries;
- military history;
- current shipping and industrial activity (views over the steel mills are essential for this purpose);
- air and water pollution and treatment methods;
- fish and wildlife history and their potentials in an urban environment;
- the role of plants in the urban environment;
- land use and population;
- points of interest to visit in the area.

This centre should be the principal information point for visitors to the area, and the information should be cross-linked with other points of interest including Dundurn Castle, Rock Gardens, Desjardins Canal, Rock Chapel and other interpretive centres. The centre should be a stopping point for harbour tour boats and eventually for lake tour boats.

The centre should be constructed on landfill or piles; fill will probably be available from excavations for the proposed Q.E.W. tunnel. The design of the centre itself should include a viewing tower that would enhance visitor opportunities to understand and enjoy the area.

Access to the centre would be on bridges across the proposed Q.E.W. tunnel. Sewer and water services could be provided from Hamilton at costs that are reasonable in relation to overall costs of Beach redevelopment. If unforeseen servicing problems are subsequently identified, holding tanks or a different location for the centre should be considered. Locations north of the canal (B38 or B41) are reasonable alternatives.

The proposed location of the Interpretive Centre (H36) has the following advantages:

- close association with the Canada Centre of Inland Waters whose area of concern is closely allied to the purposes of the Interpretive Centre;

- adjacent to the proposed "action centre" (Tivoli-La Ronde) for less intellectual types of recreation;
- close to the shipping channel and lift bridge where recreation, economic and transportation functions can be observed;
- panoramic views of the industrial harbour, the escarpment, and Lake Ontario.

Camping: The camping area in Confederation Park (H49) should be expanded eastward to provide for future requirements and to establish a suitable tenting area (S1). Cottages and private properties in area S1 should be acquired in public ownership as they come on the market. Assembly of this land by private developers should be prevented through zoning regulations or by seeking public options on the properties.

Passive Park Areas: The majority of the redeveloped Beach should be landscaped for passive purposes or for low intensity park use. In general, the developments so far completed at Confederation Park should be continued northward and linked by an improved Beach Boulevard, similar in quality to the Niagara Parks Commission roads at Queenston and Niagara on the Lake. More intensive and noisy uses such as swimming pools and amusement rides should be concentrated at a few selected locations separate from the passive areas. Major landscaping and tree planting programs will be required to achieve the full potential of the area.

Public Services and Institutions: The following facilities should remain on the Beach and every effort should be made to design and manage the facilities in ways that will enhance the Beach environment:

- Burlington Sewage Treatment Plant and Brant Hospital, (B36, 37).
- Hamilton Sewage Treatment Plant and Water Treatment Plant (H26, 27)
- Canada Centre for Inland Waters (B40)
- any schools or churches or other buildings of historic or architectural merit.

Servicing: Sewer and water services for beach developments should be provided from Burlington and Hamilton. It will probably not be practicable to carry services across the canal in the proposed Q.E.W. tunnel.

Costs: In addition to reconstructing the Queen Elizabeth Way, approximately \$92 million will be required to carry out the principal public projects on the Beach as follows:

<u>Project</u>	<u>Estimated cost in millions of dollars</u>
acquisition of land and buildings, clearance of buildings, removal of CNR railway, and basic landscaping	52
landfill and protection at Indian Creek area and for Interpretive Centre	3
relocation of hydro transmission lines into underground conduits	23
access roads and services for Interpretive Centre, Tourist Commercial and Indian Creek area	4
construction of Interpretive Centre	10
	92

Implementation:

The development and management of the Beach will be complex and very costly. The area is partly in two Regional Municipalities, in three Area Municipalities, and in two conservation areas. Negotiations will mainly involve: The Ministry of Transportation and Communications, the Ontario Hydro-Electric Power Commission, CNR, about 900 home owners, and other private owners, the Canada Centre for Inland Waters, Hamilton Harbour Commissioners, and the Regional and Area Municipalities.

To coordinate planning and implementation, an inter-regional special-purpose body will be required. For this purpose a Beach task force (or commission) should

be formed immediately. This body should be comprised of elected representatives of the two Regions, the three Area Municipalities and the Province of Ontario. Their tasks should include:

- preparation of a long-range development plan for the Beach;
- negotiations with regions, area municipalities, the Province and others regarding funding for planning, land purchase, clearance and development;
- negotiations with regional and area planning authorities to establish the necessary planning controls to implement the plan;
- coordination of ongoing public and private developments to ensure that the policies of the overall plan are being carried out.

A staff of planners and technical people should be engaged to carry out the day-to-day work of the task force.

When the development has been substantially completed, perhaps in 15 to 20 years, the task force may no longer be required.

For the near future, the proposed widening of the Q.E.W. presents an opportunity to implement some elements of the plan. It requires the removal of some housing and will eventually provide some land for park purposes. Transit access to the Beach can be incorporated into the design, and surplus excavated material will be available for the construction of the site for the interpretive centre. A portion of the bayside O.H.E.P.C. line could be relocated underground at nominal cost. Access and services can be provided for the interpretive centre, the tourist commercial complex and the marina using the right of way of the Q.E.W.

Allocation of Costs and Responsibilities

Direct costs to the Province and the H.E.P.C will probably amount to about \$39 million for relocation of transmission lines, and Interpretive Centre development. This is in addition to redevelopment of the Queen Elizabeth Way and removal of the Burlington Skyway.

Acquisition of land and buildings, clearance and landscaping on the Beach will amount to about \$54 million, and should be administered by the Beach task force. However, because of the unique nature of the Beach area and its strategic location on a provincial tour route, the Province should assume a substantial portion of these costs. For preliminary discussion, we have assumed the shares to be:

Halton Region	\$ 5 million
Hamilton-Wentworth Region	\$ 9 million
Province of Ontario	\$40 million

As land becomes available for recreational development, sites should be leased by the task force to private enterprises for the construction and management of selected recreation facilities such as accommodation, restaurants, amusement areas and marinas.

CHAPTER 13: HAMILTON
HARBOUR

Introduction

Hamilton Harbour is one of the most active shipping harbours in Canada; it contains the principal steel manufacturing centre in Canada; it is a remarkable recreational and environmental asset; and it is the receiver of sewage effluent from Hamilton, Burlington, and Dundas.

In recent years the Harbour's function as a recreational and environmental asset has been increasingly threatened by landfilling for industrial and port functions and by increased sewage effluent from the expanding communities. Policies are urgently needed that will optimize the Harbour's potential to meet the competing demands for use of its water and its adjacent land areas.

Recommendations have been made throughout this report on a number of Harbour issues. But, because the Harbour is such an important and complex part of the study area, these recommendations are summarized here, together with additional information and recommendations.

Water Quality

Tertiary treatment should be installed as soon as possible in all sewage treatment plants discharging into the Harbour (Dundas, Burlington, Hamilton plants).

Studies should be commenced on the feasibility of connecting the Dundas sewers to the Hamilton system, and stopping the flow of sewage effluent into Cootes Paradise.

A "Wildlife and Recreational Water Quality Zone" should be established (H14 and H36). Water quality should be upgraded in this area to re-establish anadromous fish (salmon, trout) in the Harbour and in Grindstone Creek.

The outfall pipe from Burlington skyway sewage treatment plant should be extended towards the centre of the Harbour,

past the limit of the "Wildlife and Recreational Water Quality Zone."

Approvals for Landfill

As a general policy, no further filling of the Harbour should be permitted. However, some agreements for further filling have already been made and from time to time we believe that legitimate cases for additional filling or construction on piles will arise. To ensure that the highest possible water quality standards are maintained, we recommend that all future applications to place landfill or to construct on piles or barges in the Harbour be reviewed by an inter-regional Joint Committee on Landfill and Water Quality in the Harbour. Criteria for evaluating applications are listed in Chapter 4. Until the proposed Joint Committee on Landfill and Water Quality has been established, the Hamilton Conservation Authority and the Hamilton Harbour Commissioners should review all landfill applications in consultation with the Area and Regional Municipalities.

New Regional Boundary in the Harbour, B61 to B40

To enable the recommended Joint Committee on Landfill and Water Quality to work effectively, the boundary between the Hamilton-Wentworth Regional Municipality and the Halton Regional Municipality should be moved from the north shore of the Harbour to a line more centrally located in the Harbour (B61 to B40).

Port Expansion (H20)

During the next ten years, through modernization and more efficient utilization of land, present port facilities (public and private) can be improved to accommodate projected growth of 20% to 30% in base commodities and general cargo. Further growth cannot be reasonably expected without additional new space for berthing. This berthing space must be backed up by immediately adjacent land for distribution and consolidation of goods, warehousing and loading facilities.

To provide for this expansion, more land area will be required, either on landfill or by redevelopment of existing land area to the west or south. Two new berths will be required to handle an expected additional 300,000 tons of general cargo. And three additional berths will probably be required for base commodity cargoes (200,000

to 250,000 tons per year per berth). This estimate is based on the assumption that there will be larger, more modern ships and more efficient cargo transfer methods. With attendant docking, warehousing and trans-shipment facilities, each berth requires 15 to 20 acres of waterfront land. It is estimated, therefore, that for five new berths that are likely to be required in the next 15 to 20 years, about 100 acres of additional waterfront land will be needed.

Although it will necessitate removal and dredging of part of Randle Reef, we recommend that any approved new berthing and dockside facilities, be located in the area of the head of Piers 11, 12, 13 and 14 (Map 2). We further recommended that explorations be conducted to find suitable alternative methods of construction of piers and docking facilities, in order to obviate the need for land fill. And, we recommend that landfill be kept to minimum consistent with the proven requirements of necessary dredging and of proven need for more land with immediate access to the shore. Any application for land-fill should be considered only after all reasonable alternatives for redevelopment of existing land areas to the south and west have been carefully studied.

In view of these considerations we recommend that a 100 acre landfill area be reserved for possible future expansion of the base commodity and general cargo port (H20).

Industrial Landfill (H22)

During the next 15 - 20 years, the growth in bulk cargo can be handled using the present lands owned by the steel companies and the lands to be created by filling up to the 1971 agreed headline.

Landfill for Railway and Road Expansion (H9)

Consideration is being given to landfill at the west end of the Harbour for additional rail and road facilities. We recommend that this part of the Harbour be reserved for primarily recreational use.

No filling should be permitted until a long range plan for the area has been completed that includes space

for community waterfront parks, public and private recreational boating harbours, tour boats and water buses, and pedestrian connections to Dundurn Castle grounds.

Existing Landfill on the
Bayside of the Beach
(H30, 32, 33)

Landfill in this area was originally intended for port/ industrial operations. Such uses are not compatible with our recommended redevelopment of the Beach and should not be permitted. The existing fill and berm should be removed and used for approved filling elsewhere. (e.g. Queen Elizabeth Way, Indian Creek Harbour, Interpretive Centre, Spencer Smith Harbour.

Filling of Private
Water Lots in Aldershot

In the past, some private owners have filled portions of private waterlots on the north shore of the Harbour. No further filling should be permitted without approval of the proposed Joint Committee. (The Hamilton Region Conservation Authority should act on an interim basis until the Joint Committee has been established).

Lax Landfill Area (H13)

The Lax landfill area has been proposed by the owners as a multiple housing development. This area should become part of a community waterfront park. Housing should not be permitted on this site.

Queen Elizabeth Way
Expansion (H33A)

The proposed new Queen Elizabeth Way should be located on the western edge of the Beach isthmus to minimize interference with recommended recreational uses on the lakeside of the Beach. Construction on piles or fill will probably be necessary in order to achieve the best possible road alignment and long term recreational objectives for the Beach.

Windermere Basin (H24)

The present water area and water volume in Windermere Basin should be maintained in order to hasten purifying action on effluents from the Hamilton sewage treatment plant. When tertiary treatment has been installed, the basin should be dredged of organic sediments. No filling should be permitted in this area.

Anchorage Area for
Commercial Shipping
B50-B58

The present anchorage area for commercial shipping is larger than required during the next twenty years. We recommend that the area be reduced in size (Map 2,

B50-B58); this would allow for development of the recommended recreational harbour at Indian Creek (B42).

Recreational Development
in the West End of the
Harbour

Waterfront areas between the Harbour Commissioners Docks (H15) and the railway area below Dundurn Castle, provide the only remaining opportunity to secure public waterfront for downtown Hamilton. We recommend the re-development of this area as a major water-oriented community recreation area. Boat clubs (public and private), picnic areas, promenades and tour boat facilities should be established in this location. About 1,000 boat slips should eventually be provided.

A long range development plan for the area should include the boat club areas, Lax landfill area, trucking terminal, CNR Railway Yards and should allow for the possible extension of Burlington Street (H9, 13, 14, and 15).

Grindstone Bay, Carroll's
Point Area (B63,64,65)

Grindstone Bay, Grindstone Creek Marshes and Carroll's Point have excellent potential for passive waterfront recreation activities. These areas should be jointly managed by the Royal Botanical Gardens and the City of Hamilton for such activities as fishing, quiet water boating, picnics, nature trails and skating.

LaSalle Park (B52)

LaSalle Park should be revitalized as a community park with a small public marina for about 150 boats.

Indian Creek Harbour (B42)

A public/private marina, recreational harbour and community park should be established near the mouth of Indian Creek. Together with boat slips at the recommended adjoining tourist commercial development (B41), a total of 750 boat slips should be eventually provided.

Tourist Commercial (B41)

A tourist-commercial development with accommodation, restaurant and harbour should be encouraged adjacent to the recommended Indian Creek park and harbour.

Interpretive Centre of
the Environment (H36)

A principal recreational attraction on the redeveloped Beach should be an interpretive and information centre (Chapter 12, p. 5).

Harbours Tours and Water Transit

Private operators should be encouraged to operate sightseeing tours in the harbour. The principal docking locations should be the recommended new Hamilton Waterfront Park (H9 to H15), LaSalle Park and the recommended Interpretive Centre of the Environment (H36).

As population increases, public transit by water bus will probably become economically feasible for moving people between Burlington, Aldershot and Central Hamilton. Facilities at tour-boat docking locations (above) should be designed to incorporate this form of public transit.

Implementation

Current problems in the Harbour with respect to landfill, water quality, port expansion, industrial expansion, recreational needs, general land use and transportation have arisen mainly because:

- a) there has been little co-ordination of overall policies that would establish a desirable balance among competing objectives;
- b) over the years, policy-making powers have been delegated to a number of relatively independent bodies including: Hamilton Harbour Commissioners, Hamilton Conservation Authority, City of Hamilton, Town of Burlington and the Province of Ontario.

The recent establishment of the Regional Municipalities of Halton and Hamilton-Wentworth should go a long way towards reducing policy-making and co-ordinating difficulties. By December 31, 1976 the Regions must have prepared regional official plans that set overall policies for future development in social, economic, physical and environmental terms. Each current Harbour problem should be resolvable within policies that will be established in these new official plans.

Although co-ordination of policy will be somewhat simplified by the establishment of the regions, the Harbour and its surrounding lands will still be in two regions. In order to provide for equitable areas of Harbour jurisdiction for the two regions, we recommend that the inter-regional boundary in the Harbour be moved from the north shore to the centre of the Harbour (Map 2).

If regional policies on the Harbour are to be effective, they must be worked out on an inter-regional basis and occasionally implemented by inter-regional bodies such as our recommended Joint Committee on Landfill and Water Quality.

Until regional policies have been established, the Regions, City of Hamilton, City of Burlington, Conservation Authorities and Harbour Commissioners should work co-operatively on our recommendations regarding the future of the Harbour. To assist with this process and to establish a sound basis for official plan policies in the Harbour, the Regions should, jointly, and as soon as possible, convene meetings establishing Harbour planning policies.

CHAPTER 14:
TRANSPORTATION
FACILITIES

There are a number of transportation facility proposals, currently being studied by provincial and local authorities, that have major implications for the future of the Waterfront area. Our comments and recommendations regarding most of these facilities have been made throughout the report and are summarized below for easy reference.

Queen Elizabeth Way on the Beach: We endorse the proposals of the Ministry of Transport and Communications to reconstruct the Queen Elizabeth Way as a tunnel under the Burlington Canal. Further, we believe that the proposed expressway should be constructed along the bayside of the isthmus, partially on fill if necessary, to keep the road as far as possible from the lakeside of the beach and to minimize air and noise pollution in future recreation areas on the lakeside. Substantial berming and planting should be placed along the east side of the proposed expressway.

CNR Line on the Beach: It should be a long-term objective to remove the CNR line on the Beach; this will make it possible to more fully exploit the unique recreation and aesthetic potentials of the Beach area.

Burlington Street and the CNR Freight Yards in Hamilton: In view of our proposed long-term development of the west end of Hamilton Harbour as a major recreation area, consideration should be given to the eventual relocation of the CNR freight yards. An overall assessment of railway routes in the Hamilton area is to be made in the near future. At that time, the opportunities for recreation and residential uses near the foot of Queen Street should be factors in deciding the long-run disposition of the freight yards. The economic implications of relocation and of disturbance to railway operations are very great. Nevertheless, it may be that the value of this site as a recreation area, outweighs economic considerations.

The proposed westward extension of Burlington Street is also affected by our recommended recreation developments at the west end of the Hamilton Harbour. The selected

alignment should by-pass possible future recreation developments on the CNR yards.

Redhill Creek Expressway: The road network recommended by the Hamilton area Transportation Strategy Study includes a Mountain Expressway and a Redhill Creek Expressway as high capacity traffic routes by-passing downtown Hamilton. These routes would undoubtedly have advantages from a transportation point of view, and would divert traffic from residential and commercial areas. However, the construction of an expressway through the Redhill Valley would be a serious incursion into this important recreational area. We believe that an alignment further to the east should be chosen.

Stoney Creek Interchange: The Ministry of Transportation and Communications is planning a major alteration of the interchange at the Stoney Creek traffic circle. This is in the vicinity of marshes which have a valuable function as waterfowl breeding and nesting areas. Any redesign of the intersection should avoid damage to this environmentally important area.

York Road: A proposed re-alignment of York Road in Dundas, would run near the west end of the Royal Botanical Gardens, cross the Desjardins Canal and Spencer Creek, and travel along the south side of Spencer Creek. We understand that a decision to construct this road has already been made in spite of obvious detrimental impacts on the Royal Botanical Gardens and Spencer Creek. If this road is built, it should be designed as a low-speed scenic road (Scenic By-way) and very careful attention should be given to landscaping and design details.

Lakeshore Road: Lakeshore Road in Oakville and Burlington is an important link in the proposed tour-route system, but at the same time it serves an essential function as an urban arterial road. As population grows, increased demand for tourist and community use will be placed on Lakeshore Road. We recommend that the present scenic character of the road be maintained; that proposals to widen the road or to remove trees be strongly resisted; and that alternative east-west arterial routes be

developed further north. New Street and Rebecca Street appear to provide the basis of such an east-west route.

CHAPTER 15:
IMPLEMENTATION

The purpose of this chapter is to summarize the recommended projects, cost estimates, and implementation recommendations made in the eleven principal chapters of the report:

Shore Protection
Water Quality
Air Quality
Stream Valley Protection
Fish and Wildlife
Land Use, Estates, Housing and Subdivisions
Parks and Waterfront Access
Recreational Harbours
Touring and Points of Interest
The Beach
Hamilton Harbour

Responsibilities for
Implementation

Within each of the eleven principal areas of concern there are four aspects of implementation that must be considered. They are:

1. Formulation of Policy and Co-ordination of Implementation

Convening the relevant authorities and groups on a continuing basis for : preparation of concepts, goals, general planning objectives; formulation of planning controls, official plans and standards, cost-sharing policies, priorities and timing of projects; preparation of zoning by-laws, building by-laws, subdivision agreements, site plan agreements, performance standards, covenants, and environmental controls.

2. Acquisition

Land purchases and negotiations of leases, agreements, exchanges, dedications, and expropriations.

3. Development

Detailed financing, design and construction.

4. Management

Administration, including: maintenance, protection, policing, programming and operation of programs.

The current distribution of these responsibilities and our recommendations for the future are summarized in Table 4.

The main points include:

- There is currently no single agency charged with policy formulation and co-ordination of implementation for: shore protection, stream valley protection, major parks, fish and wildlife, recreational harbours, the Beach, or Hamilton Harbour. These matters are regional in scope and should be co-ordinated by either the Conservation Authorities or the Regional Municipalities. We recognize that the Regional Municipalities are newly organized and that the distribution of responsibilities between the Regions and the Conservation Authorities will have to be worked out over a number of years. In the meantime, in order to get essential projects underway, we recommend that the Conservation Authorities accept co-ordinating roles for a number of priority projects including shore protection, stream valley protection, recreational harbour policy, and fish and wildlife policy. The degree to which the Authorities become involved in construction and management in these areas of work will depend on divisions of responsibility that are worked out in practice over the coming years.
- The Regional Municipalities and Area Municipalities should in the long run develop a financial base that will enable them to acquire, develop and manage the recommended parks, waterfront access locations, recreational harbours and stream valley lands. However, present local sources of funds are unlikely to be sufficient to carry out the recommended works. We have therefore proposed that the Conservation Authorities, who may have better access to provincial funds, and the Province itself, give substantial financial assistance to the acquisition and development of recreational areas.
- Solutions to the problems of the waterfront are, in the main, public responsibilities. Private contributions should be principally in construction and management of approved housing and recreation developments, industrial pollution controls for air

and water, and occasional shore protection works where owners are wealthy enough to be able to construct works that meet regional standards.

The Area Municipalities should in general act in supporting roles to the Regions, Conservation Authorities and private enterprise in implementing our recommendations. They should, however, take leading roles in the development and management of parks, waterfront access locations, and local planning for tourism.

TABLE 4

RESPONSIBILITIES FOR
IMPLEMENTATION

		● Major Role ○ Supporting Role ■ Future Major Role ◆ Interim Major Role R Recommended E Existing PROVINCE OF ONTARIO REGIONAL MUNICIPALITY AREA MUNICIPALITY CONSERVATION AUTHORITY HARBOUR COMMISSIONERS ROYAL BOTANICAL GARDENS PRIVATE ENTERPRISE							
		R	E	R	E	R	E	R	E
SHORE PROTECTION	Policy	○	-	■	-	○	○	◆	-
	Acquisition	○	-	■	-	-	○	◆	-
	Development	○	-	■	-	○	●	◆	-
	Management	-	-	■	-	○	●	◆	-
WATER QUALITY	Policy	●	●	●	○	○	-	-	-
	Acquisition	-	-	●	●	-	-	-	-
	Development	-	-	●	●	-	-	-	-
	Management	○	-	●	●	-	-	-	-
AIR QUALITY	Policy	●	●	○	-	○	○	-	-
	Acquisition	-	-	-	-	-	-	-	-
	Development	-	-	○	-	-	-	-	-
	Management	●	●	○	-	○	-	-	-
STREAM VALLEY PROTECTION	Policy	-	-	■	-	○	○	●	○
	Acquisition	-	-	■	-	○	○	●	○
	Development	-	-	■	-	○	-	◆	○
	Management	-	-	■	-	○	-	◆	○
FISH AND WILDLIFE	Policy	●	○	○	-	-	-	●	○
	Acquisition	-	-	-	-	○	○	●	○
	Development	○	○	○	-	○	○	○	○
	Management	○	○	○	-	○	○	○	○
LAND USE, ESTATES, HOUSING, SUBDIVISIONS	Policy	○	○	●	●	○	○	○	○
	Acquisition	-	-	-	-	-	-	-	-
	Development	-	-	-	-	-	-	-	-
	Management	-	-	-	-	-	-	-	-
PARKS AND WATERFRONT ACCESS	Policy	○	-	●	-	○	●	○	○
	Acquisition	◆	-	■	-	●	●	◆	○
	Development	-	-	●	-	●	●	○	○
	Management	-	-	●	-	●	●	○	○
RECREATIONAL HARBOURS	Policy	-	-	■	-	○	○	◆	-
	Acquisition	-	-	■	-	○	○	◆	-
	Development	-	-	■	-	○	○	◆	-
	Management	-	-	■	-	○	○	◆	-
TOURING AND POINTS OF INTEREST	Policy	●	●	■	-	○	○	-	-
	Acquisition	●	-	●	-	●	-	-	-
	Development	●	-	●	-	●	○	-	○
	Management	●	-	●	-	●	○	-	○
THE BEACH	Policy	○	○	●	-	○	○	-	-
	Acquisition	○	○	●	-	○	○	-	-
	Development	○	○	●	-	○	○	-	-
	Management	○	○	●	-	○	○	-	-
HAMILTON HARBOUR LANDFILL	Policy	○	○	■	○	○	○	◆	○
	Acquisition	○	-	○	-	○	-	-	-
	Development	○	-	○	-	○	-	-	-
	Management	○	-	○	-	○	-	-	-

Costs and Priorities

The main recommendations in the waterfront report are summarized in Table 5, and priorities are suggested.

The following projects should be started immediately:

- preparation of an overall Shore Protection Plan for the entire waterfront;
- construction of shoreworks according to policies developed in the Shore Protection Plan;
- phasing out of small sewage treatment plants and introduction of tertiary treatment in large plants that will continue in operation;
- formation of an inter-regional Joint Committee on Landfill and Water Quality in Hamilton Harbour. The function of this committee would be to develop policies and criteria, based on our recommendations (Chapters 4 and 13) for the improvement of water quality and water use in the Harbour;
- preparation of a Stream Valley Protection Plan that will ensure the long term preservation and enhancement of stream valleys as recreational and environmental assets;
- adoption of overall policies for the preservation, and development of fish and wildlife resources, as proposed in Chapter 7;
- adoption of overall policies for parks and waterfront access as proposed in Chapter 9;
- preparation of a long range development plan for the Beach, in which the unique recreation potentials of the area are recaptured as outlined in Chapter 12.
- preparation of policies on land use, high density locations, subdivision control, use of estate lands and dedications of waterfront lands for public purposes as outlined in Chapters 2, 8 and 9.

The estimated cost of carrying out these and other recommended projects to various levels of completion as described in the relevant chapters, is about \$224 million.

Based on the estimates contained in each chapter, our suggested overall assignment of costs for recommended projects is:

Province	\$ 79 M
Regional Municipalities	\$ 14 M
Halton Conservation Authority	\$ 20 M
Hamilton Conservation Authority	\$ 45 M
Area Municipalities	\$ 16 M
Private	\$ 4 M
Joint (Regional & Area Municipalities)	\$0.7 M
Shore Protection Costs to be allocated	\$ 44 M
Other land acquisition, etc.	\$ 1 M
	\$223.7 M

TABLE 5: SUMMARY OF MAIN PROJECTS, COSTS, RESPONSIBILITIES AND PRIORITIES

	PROJECT	COST (\$ million) excepted as noted	MAIN RESPONSIBILITY	PRIORITY *
Shore Protection	Prepare Shore Protection Plan	Not estimated	Interim - Conservation Auth. Long Term - Regional Municipalities	A
	Co-ordinate Design & Construction of Shore Works			
	Construct Shore Works	\$44M		
Water Quality	Phase out small Sewage Treatment Plants and develop Tertiary Treatment	Not estimated	Regional Municipalities	A
	Improve quality of industrial effluents	Not estimated	Industries	A
	Establish landfill and water quality control policies for Hamilton Harbour	Not estimated	Regional Municipalities	A
Air Quality	Improve air quality to meet provincial standards	Not estimated	Province (Ministry of Environment) Industries	A
Stream Valley Protection	Prepare Stream Valley Protection Plan and co-ordinate implementation	\$50,000	Interim - Conservation Authorities Long Term - Regional Municipalities	A

* Priority A: Should be started immediately
Priority B: Should be started within one year
Priority C: Should be started within three years

TABLE 5; SHEET 2

	PROJECT	COST (\$ million) excepted as noted	MAIN RESPONSIBILITY	PRIORITY
Fish and Wildlife	Formulate policy and co-ordinate implementation	Not estimated	Conservation Authorities	A
	Develop and manage 9 designated wildlife areas	Not estimated	Province, Regions, Area Municipalities, Conservation Authorities, Royal Botanical Gardens.	B
	Establish interpretive centres at Bronte & Redhill Creeks	Not estimated	Local Interest Groups, Conservation Authorities	C
Land Use, Estates, Housing & Subdivisions	Formulate policies re Land Use, high density locations, subdivisions and use of estate lands	Not estimated	Regional Municipalities, Area Municipalities	A
Parks & Waterfront Access	Formulate policy and co-ordinate implementation	Not estimated	Regional Municipalities	A
	Land acquisition & basic landscaping (excluding the Beach)	\$66 M	Interim - Conservation Authorities Long Term - Regional Municipalities	B
	Acquisition, clearance, landscaping & fill for the Beach area	\$54 M	Province, Regional Municipalities	B
Recreational Harbours	Formulate policy and co-ordinate implementation	Not estimated	Interim - Conservation Authorities Long Term - Regional Municipalities	B
	Construct breakwaters, berths, landscaping, services, bldgs.	\$20M (could increase to \$30M, if islands are developed)		

TABLE 5; SHEET 3

	PROJECT	COST (\$ million) excepted as noted	MAIN RESPONSIBILITY	PRIORITY
Touring & Points of Interest	Formulate Policy and Co-ordinate Implementation	Not estimated	Provincial Gov't, Regional and Area Municipalities	B
	Signage, landscaping, lay-bys, local information centres (8)	\$0.7 M	Regional and Area Municipalities	C
	Construct main interpretive centre on Beach	\$10 M	Province	C
	Prepare Development Plan	Not estimated	Regional Municipalities	A
The Beach	Relocate transmission lines; landfill, servicing	\$29 M	Province	To be done at same time as QEW reconstruction
	Land acquisition (except for QEW widening); clearance; basic landscaping	(\$53 M included in Parks above)		
	Filling	(\$1 M included in Parks above)		
	Construct main interpretive centre	(\$10 M included in Touring above)		
Hamilton Harbour	Establish policies on land and water use and on landfill and water quality	Not estimated	Regional Municipalities	A
TOTAL		\$223.7 M		

APPENDIX 1LIST OF STREAMS

STREAM		LOCATION	MAP REFERENCE (UNIT NO.)
Oakville	1 Joshua's		1
	2 Wedgewood		2
	3 Morrison	Gairloch Gardens	2
	4 Sixteen Mile (Oakville)		3
	5 Taplow	Appleby College	4
	6 Fourteen Mile (Palermo)	Baillie Estate	5
	7 Twelve Mile (Bronte)		6
	8 Sheldon		7
Burlington	9 Appleby		8
	10 Shoreacres		9
	11 Tuck		10
	12 Roseland		10
	13 Rambo		11
	14 Hager		12
	15 Indian		14
	16 Falcon		15
	17 Grindstone	Royal Botanical Gardens	17
Dundas	18 Sulphur		21
	19 Spencer		22
Hamilton	20 Chedoke		23
	21 Redhill		29, 31
Stoney Creek	22 Stoney		32
	23 Fifty Mile Creek		38

In an addition, there are a number of very small streams, usually with intermittent flow. A majority of these are between Stoney Creek and Fifty Mile Creek.

APPENDIX 2 - UNIT COSTS

The following unit costs were used to prepare cost estimates.

Shore Protection

rubble wall or groyne	\$100/foot
island/promontory (150' wide)	\$400 to \$1,200/ft. depending on assumed availability of fill.

Parks

street-end (590 sq.yds.)	\$3,400
creek trail	\$20/foot
community and regional park	\$7,850/acre (grade, seed, trees, and parking area)
promenade easement	\$30/foot

Recreational Harbours

breakwater	\$500/foot
smalls craft slip	\$500
landscape, parking access roads, services for shore facilities	\$10,000/acre
buildings	\$20/sq.ft.

Land Acquisition

vacant	\$10,000 to \$40,000/ac. depending on location and servicing
residential land and bldgs.	\$78,000 to \$225,000/ac. depending on location and quality
industrial land and bldgs.	\$250,000 to \$750,000/ac. depending on location and quality
clearance (demolition)	\$5,000 to \$10,000 per bldg.

APPENDIX 3: LIST OF
EXISTING AND PROPOSED
PARKS AND WATERFRONT
ACCESS LOCATIONS

P : private

E : existing

Ep: partly existing

*: priority location, should be established in first
phase of implementation.

Street-End Parks

Oakville	1 Ninth Line 0.9	9 East St. 0.48
	2 Second St. 0.20	10 Nelson St. 0.49
	3 First St. 0.21	11 West River St. 0.52
	4 Brookfield Rd. 0.33	12 Mississauga St. 0.53
	5 Holyrood Ave. 0.34(E)	13 Timber St. 0.55
	6 Westdale Rd. 0.38	14 West St. 0.56
	7 Belvedere Dr. 0.44	
	8 Third Line 0.46	
Burlington	1 Appleby Pl. B.10*	10 Pearl St. B.30
	2 Walkers Line B.13*	11 Elizabeth St. B.31
	3 Fruitland Ave. B.17	12 Allview Ave. B.46
	4 Lakeland Cres. B.18	13 Stillwater Cres. B.46 (E)
	5 Guelph Line B.22*	14 King Road B.47*
	6 St. Paul St. B.23*	15 Edgewater Ave. B.48
	7 Market St. B.24*	16 Bayswater Ave. B.50
	8 Green St. B.25*	17 Glenhaven Ave. B.51*
	9 Cliffcrest Ct. B.26 (P)	18 Powder Magazine Rd. B58*
		19 Eagle Drive B50a
Hamilton	1 Gray Road H.50	

Stoney
Creek

1 Teal Ave. S.2 (E,P)	8 Glover Rd. S.16
2 Green Rd. S.3	9 McNeilly Rd. S.17
3 Millen Rd. S.7	10 Lewis Rd. S.20
4 Cherry Beach S.9	11 Winona Rd. S.24
5 Dewitt Rd. S.10	12 East St. S.25
6 Fruitland Rd. S.11	13 Creanona Blvd. S.26
7 Jones Rd. S.14	14 Fifty Rd. S.27

Creek-Mouth Parks and
Trails (13 parks,
8150 ft. of trails)

Oakville	1 Wedgewood Ck 0.11
	2 Morrison Ck. 0.14 (Ep)
	3 Brookfield Cres. 0.32
	4 Birch Hill Lane 0.36
	5 Taplow Ck. 0.37 (E,P)
	6 Fourteen Mile Ck, 0.39
	7 Sheldon Ck. 0.58

	Burlington	1 Appleby Ck. B.9 2 Shoreacres Ck. B.12* 3 Tuck Ck. B.14 4 Roseland Ck. B.19 (E) 5 Rambo Ck. B.29* 6 Indian Ck. B.43
Promenades (67,000 ft., 34 locations)	Oakville	Seventeen location of varying lengths. Total length 21,000 ft.
	Burlington	Eleven locationstotalling 15,000 ft.
	Hamilton	Three locationstotalling 11,900 ft.
	Stoney Creek	Three locations totalling 19,400 ft.
Community Parks (10)	Oakville	1. Gairloch Gardens 0.14 (E) 2. Oakville Harbour 0.27, 0.30 (Ep) 3. Coronation Park (E)
	Burlington	1. Shoreacres B.12 2. Spencer Smith B.33-B.34 (E) 3. LaSalle B.52 (E) 4. Brighton Beach B.60 (E,P)
	Hamilton	1. Hamilton Waterfront Park H.9-H.15
	Stoney Creek	1. Cherry Beach S.7 to S.10 2. Trillium Bay S.17 to S.21
Regional Parks (5)		1. Joshua's Creek 2. Bronte Creek/Sheldon Creek 3. The Beach (including Indian Creek, Burlington Beach, Hamilton Beach, Confederation Park, Redhill Creek) 4. Cootes Paradise/Royal Botanical Gardens 5. Fifty Point Conservation Area
Special Shore Access (where easements may have to be arranged)		1. Aintree Terrace 0.7 2. Bergundy Dr. 0.16

APPENDIX 4: CONSULTANT
TEAM MEMBERS

Project Directors: P. Wade, M. Dake, W. Billing,
P. Denison

Limnology: R. A. Fleming

Hydraulics: Dr. I.K. Hill

Hydrometeorology: P.J. Denison, R.A. Fleming

Geology: B. Blukajic

Erosion and Shoreline Protection: G. Gardiner

Water Quality: D.H. Matheson; Dr. I.K. Hill

Air Quality: P.J. Denison

Biology: L.A. Smythe; Ecoplans; L. van Vlymen

Landscape: W. Kehm, V. Olsen

Land Use and Planning: R. Bramley, D. Flood, J. Leat,
C. Lueth, M. Dake, R. Watts

Economic, Industrial and Demographic Research: M. Martini

Recreation: R. Watts, S. Richards

History: L. van Vlymen, R. Alexander

Infrastructure: H. Behrend

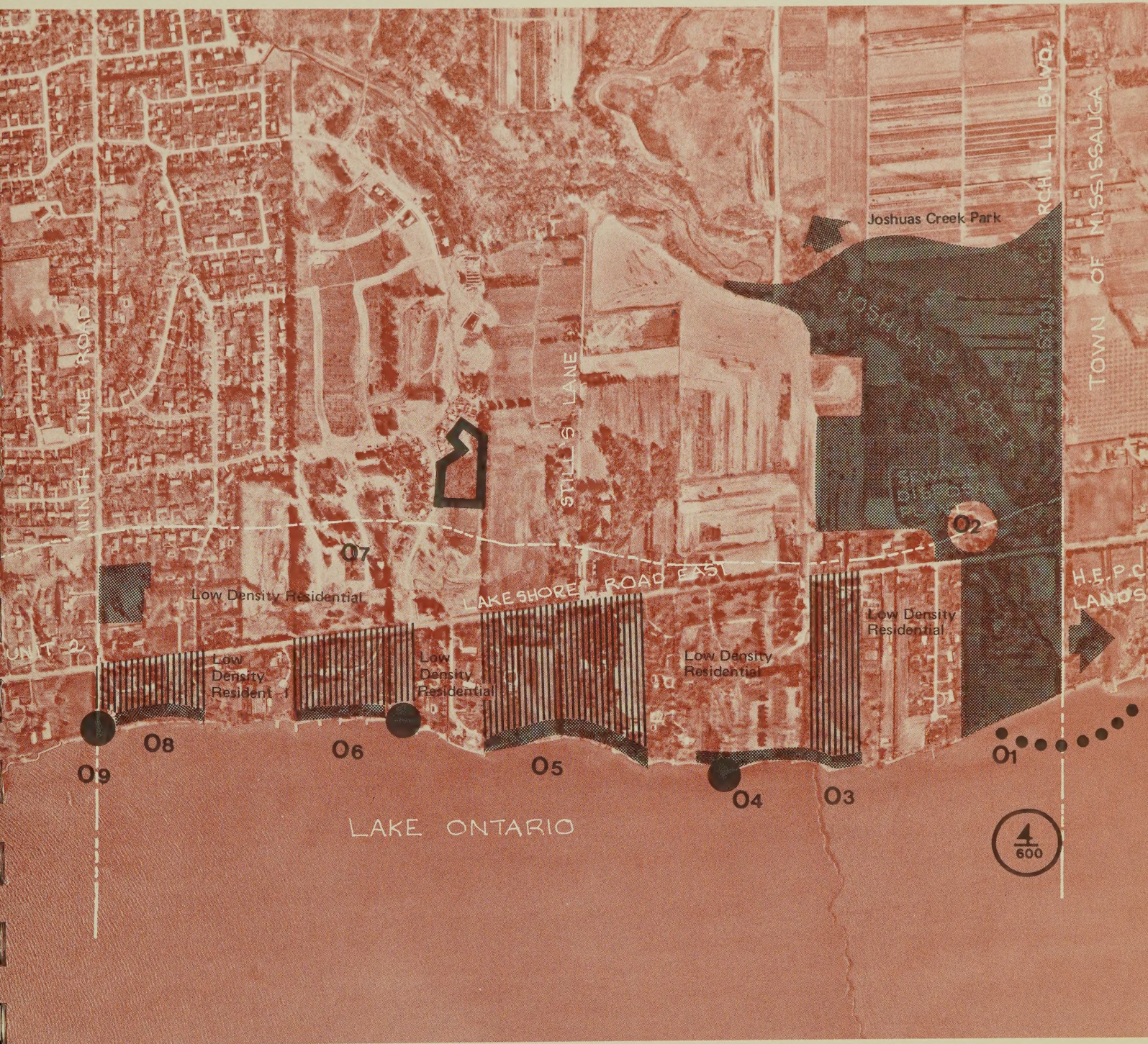
Marine and Harbour: R. Thomson, T. Mahabir

Public Administration, Finance: D. Flood

Public Participation: S. Richards

Concept development: M. Dake, D. Flood, R. Watts assisted
by the entire team

Data Bank preparation: D. Flood, P. Wong, L. van Vlymen



THE HALTON-WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



OAKVILLE
UNIT 1

LAND USE CONCEPT UNIT MAP LEGEND



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

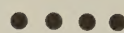
School



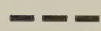
High School



Church



Desirable location for Island Breakwater.



Proposed Land Fill Limit.



Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON · WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



**OAKVILLE
UNIT 2**

LAND USE CONCEPT UNIT MAP LEGEND

 Street-End Park or Creek-Mouth Park

 Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.

 Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.

 Institution, Club or Public Utility

School



High School



Church



• • • • Desirable location for Island Breakwater.

--- Proposed Land Fill Limit.

 Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON · WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



OAKVILLE
UNIT 3

**LAND USE CONCEPT
UNIT MAP LEGEND**

 Street-End Park or Creek-Mouth Park

 Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.

 Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.

 Institution, Club or Public Utility

School



High School



Church



• • • • Desirable location for Island Breakwater.

--- Proposed Land Fill Limit.

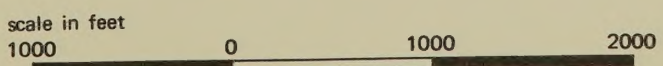
 Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON - WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT



**OAKVILLE
UNIT 4**

LAND USE CONCEPT UNIT MAP LEGEND

 Street-End Park or Creek-Mouth Park

 Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.

 Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.

 Institution, Club or Public Utility

School



High School



Church



• • • • Desirable location for Island Breakwater.

--- Proposed Land Fill Limit.

 Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON · WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



**OAKVILLE
UNIT 5**

**LAND USE CONCEPT
UNIT MAP LEGEND**

 Street-End Park or Creek-Mouth Park

 Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.

 Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.

 Institution, Club or Public Utility

School



High School



Church



● ● ● ● Desirable location for Island Breakwater.

--- Proposed Land Fill Limit.

 Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON-WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



OAKVILLE
UNIT 6

LAND USE CONCEPT
UNIT MAP LEGEND



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

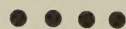
School



High School



Church



Desirable location for Island Breakwater.



Proposed Land Fill Limit.



Study Area and Unit Boundary.

W13

Text Reference Number.



THE HALTON · WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



**OAKVILLE
UNIT 7**

LAND USE CONCEPT UNIT MAP LEGEND



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

School



High School



Church



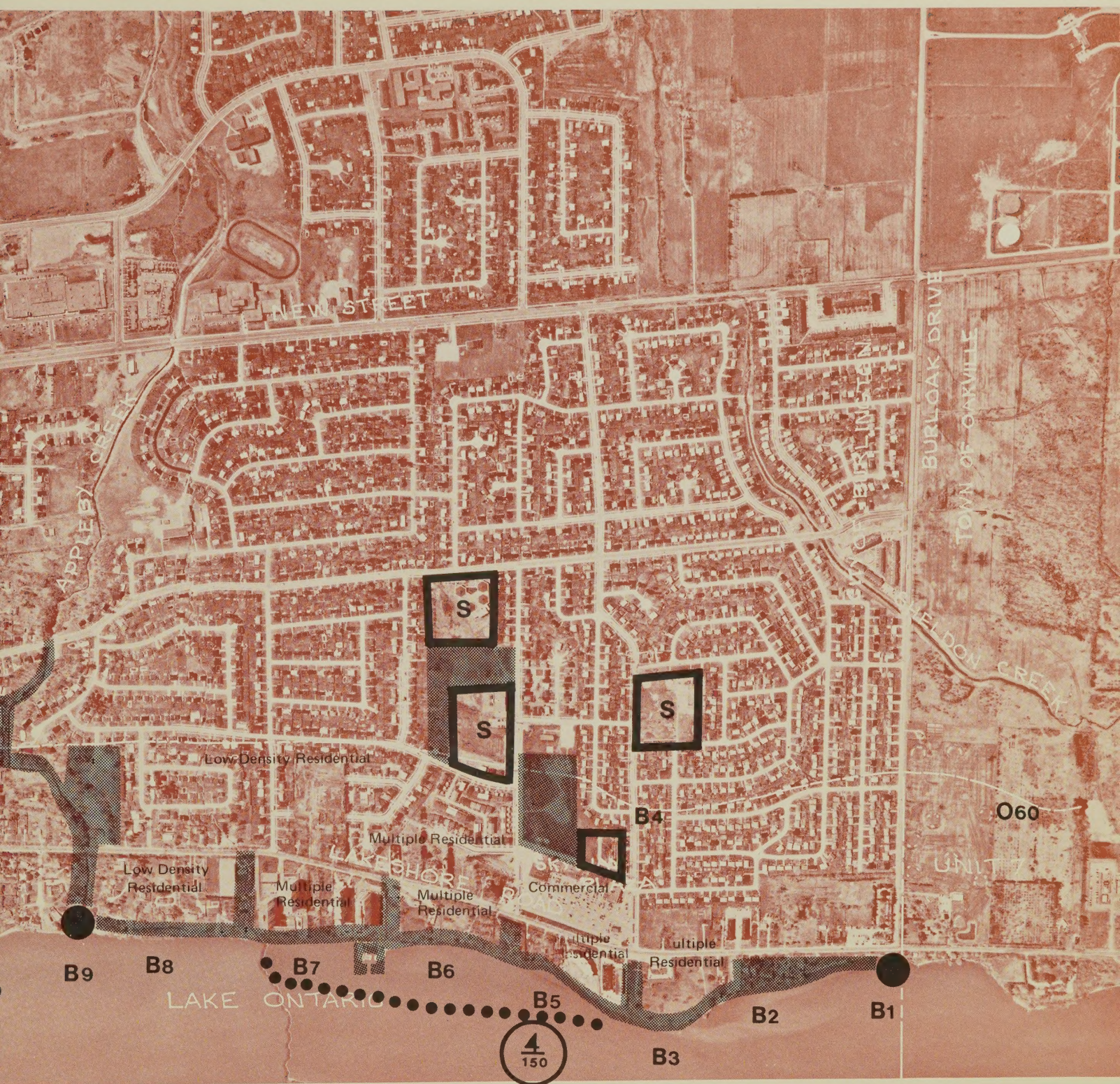
• • • • Desirable location for Island Breakwater.

— — — Proposed Land Fill Limit.



Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON-WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



BURLINGTON
UNIT 8

LAND USE CONCEPT UNIT MAP LEGEND



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

School



High School



Church



Desirable location for Island Breakwater.



Proposed Land Fill Limit.



Study Area and Unit Boundary.

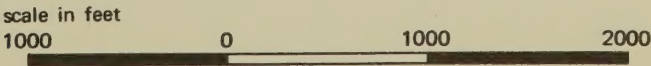
W13

Text Reference Number.



THE HALTON - WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT



BURLINGTON
UNIT 9

**LAND USE CONCEPT
UNIT MAP LEGEND**



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

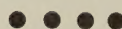
School



High School



Church



Desirable location for Island Breakwater.



Proposed Land Fill Limit.



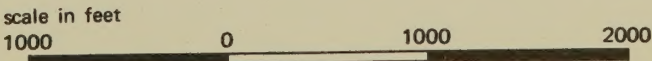
Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON · WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT



**BURLINGTON
UNIT 10**

LAND USE CONCEPT UNIT MAP LEGEND



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

School



High School



Church



Desirable location for Island Breakwater.



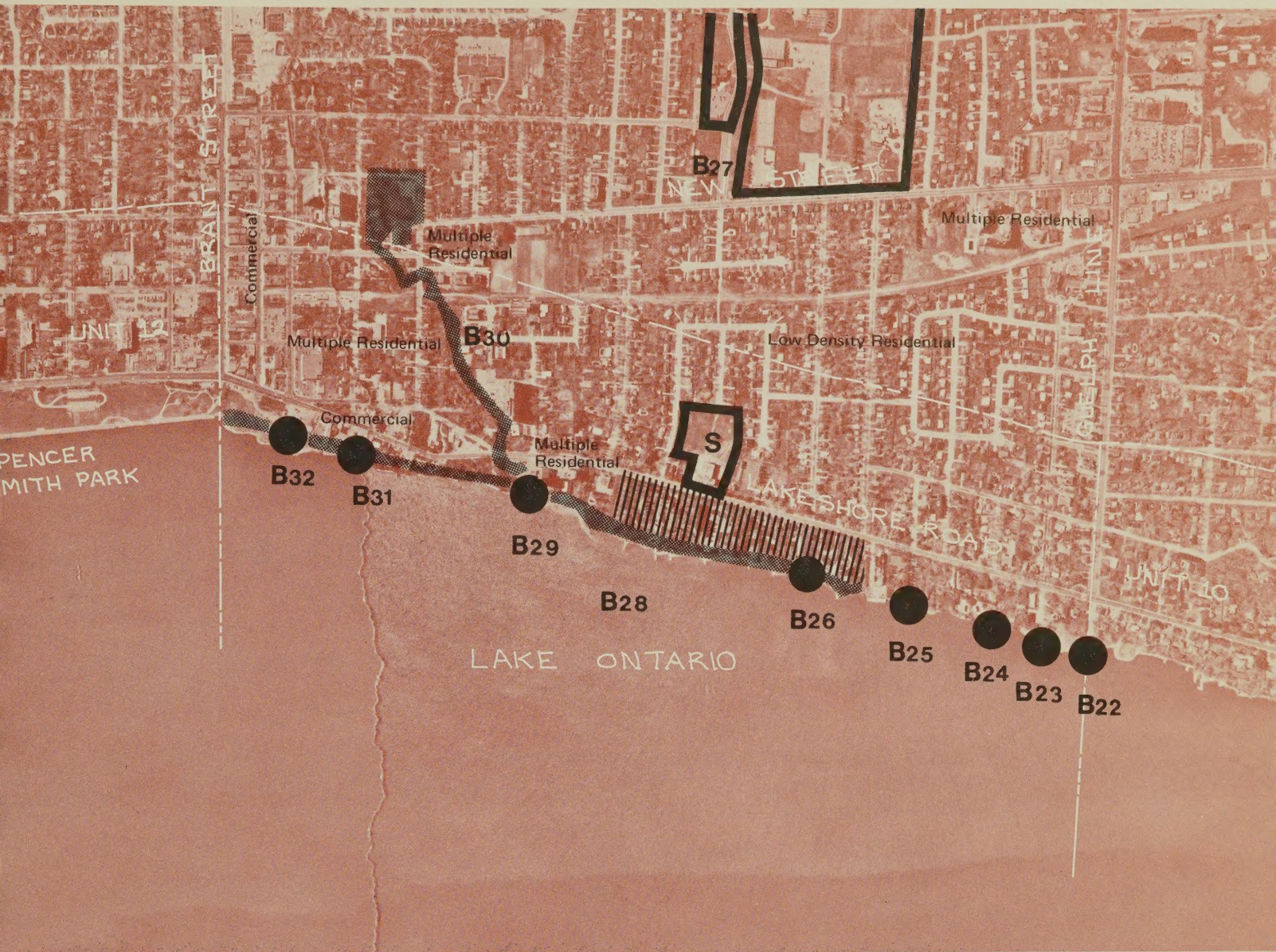
Proposed Land Fill Limit.



Study Area and Unit Boundary.

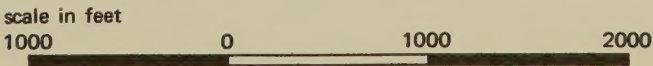
W13

Text Reference Number.



THE HALTON · WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT



BURLINGTON
UNIT 11

LAND USE CONCEPT UNIT MAP LEGEND

 Street-End Park or Creek-Mouth Park

 Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.

 Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.

 Institution, Club or Public Utility

School



High School



Church



• • • • Desirable location for Island Breakwater.

--- Proposed Land Fill Limit.

 Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON-WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



BURLINGTON
UNIT 12

LAND USE CONCEPT UNIT MAP LEGEND



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

School



High School



Church



Desirable location for Island Breakwater.



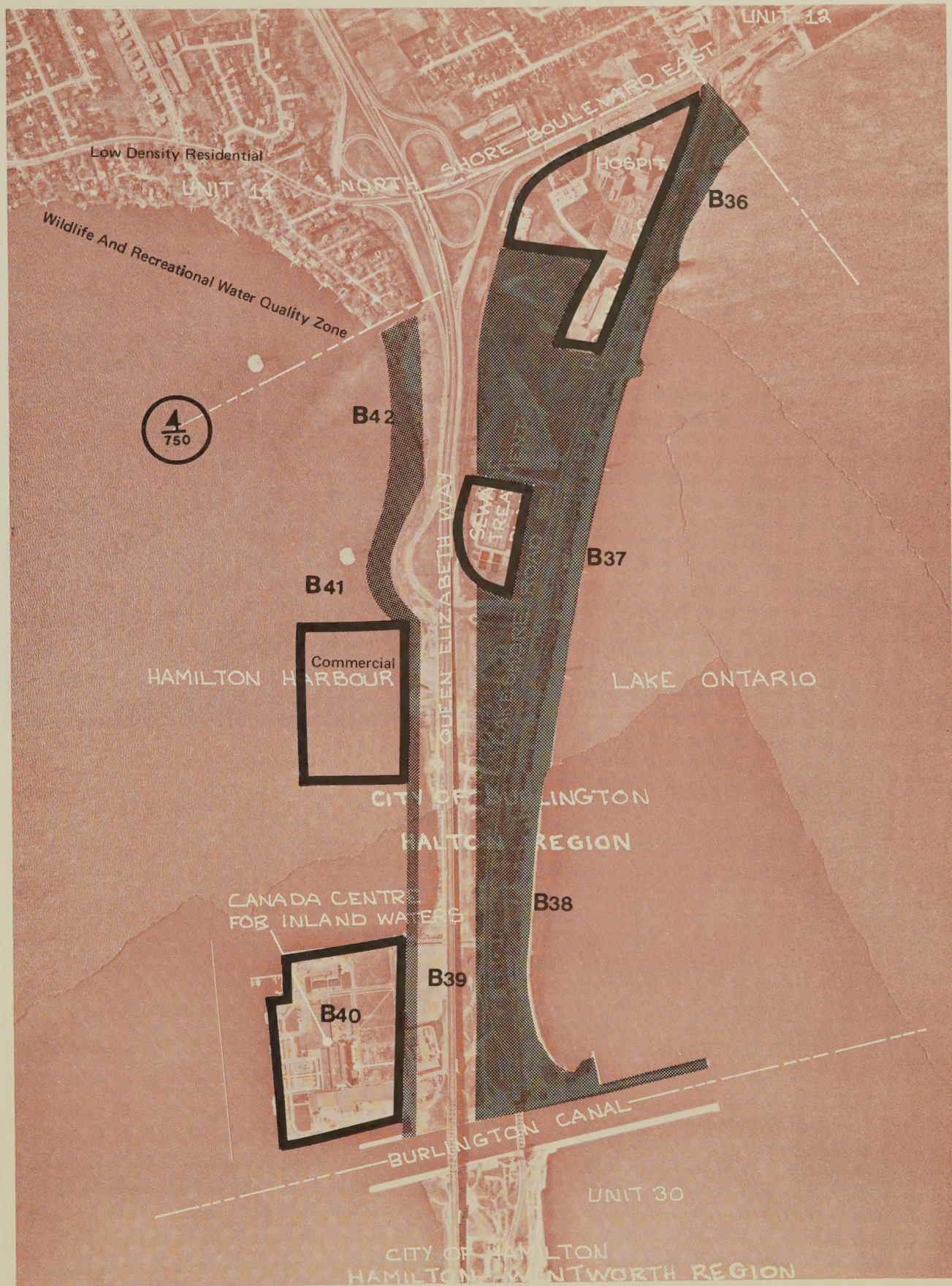
Proposed Land Fill Limit.



Study Area and Unit Boundary.

W13

Text Reference Number.



THE HALTON-WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



**BURLINGTON
UNIT 13**

LAND USE CONCEPT UNIT MAP LEGEND



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

School



High School



Church



Desirable location for Island Breakwater.



Proposed Land Fill Limit.



Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON · WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



BURLINGTON
UNIT 14

**LAND USE CONCEPT
UNIT MAP LEGEND**



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

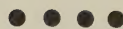
School



High School



Church



Desirable location for Island Breakwater.



Proposed Land Fill Limit.



Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON-WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



BURLINGTON
UNIT 15

**LAND USE CONCEPT
UNIT MAP LEGEND**

 Street-End Park or Creek-Mouth Park

 Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.

 Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.

 Institution, Club or Public Utility

School



High School



Church

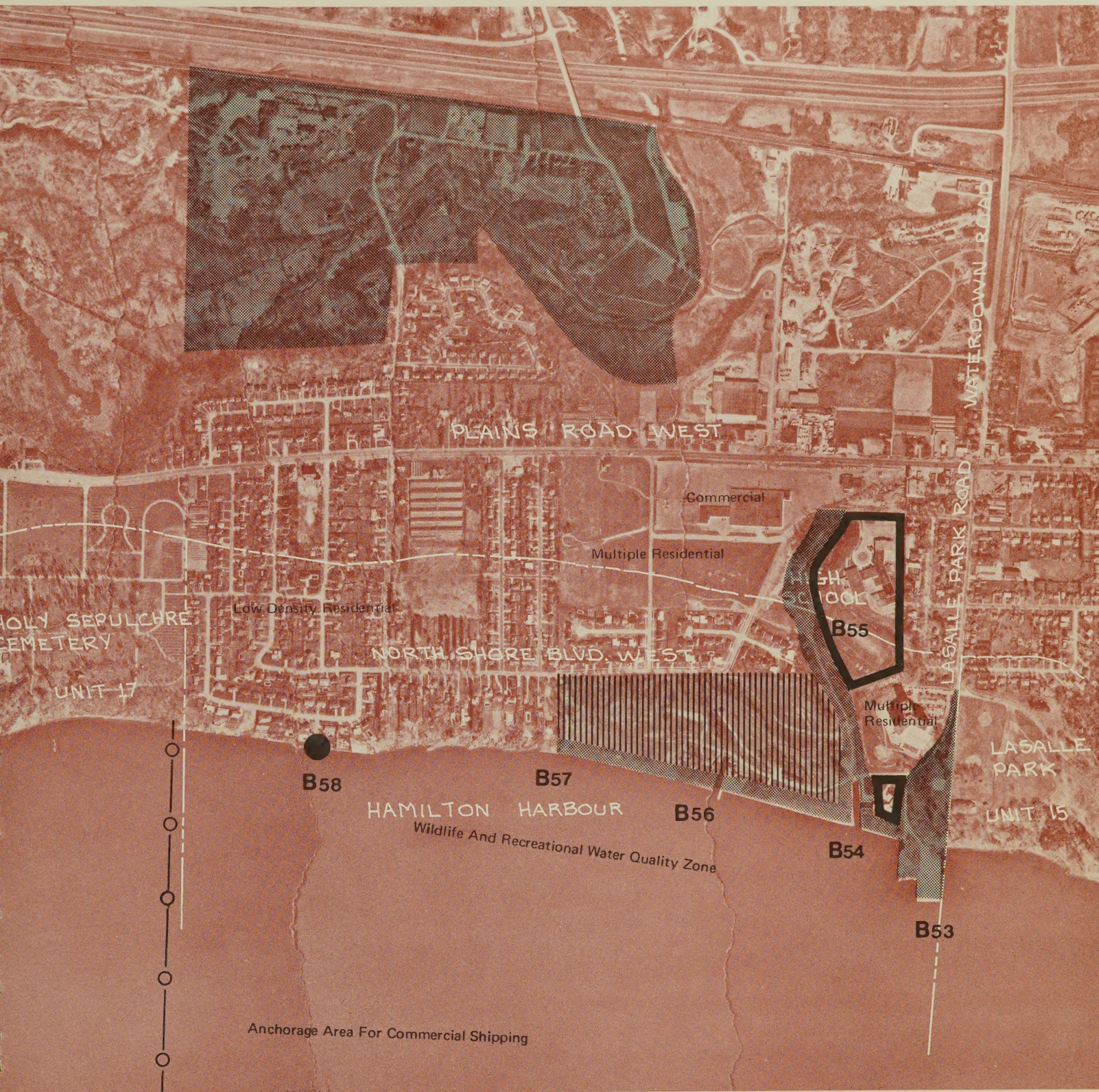


• • • • Desirable location for Island Breakwater.

--- Proposed Land Fill Limit.

 Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON - WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



BURLINGTON
UNIT 16

**LAND USE CONCEPT
UNIT MAP LEGEND**



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

School



High School



Church



Desirable location for Island Breakwater.

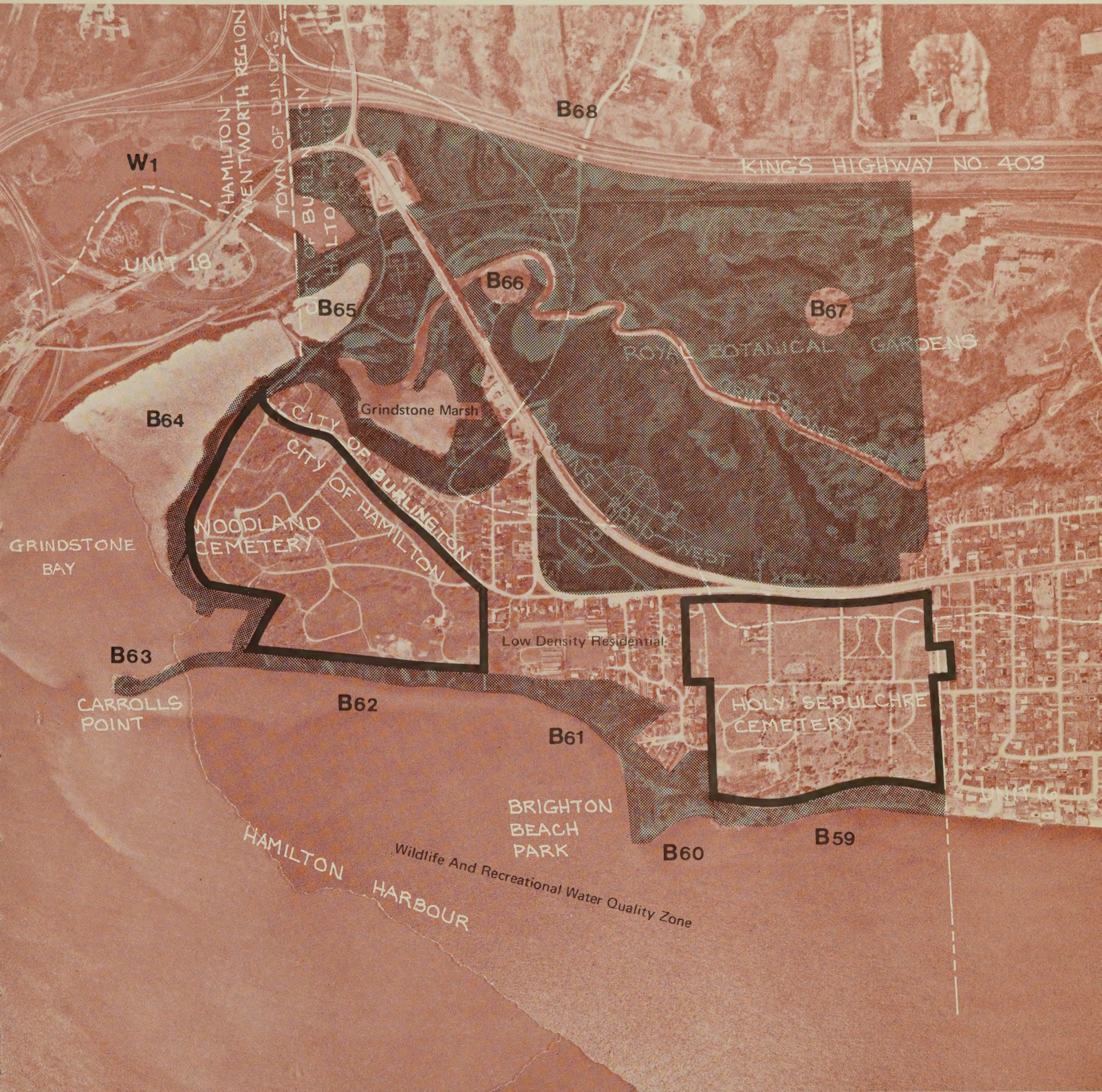


Proposed Land Fill Limit.



Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON · WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



**BURLINGTON
HAMILTON
UNIT 17**

LAND USE CONCEPT
UNIT MAP LEGEND



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

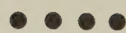
School



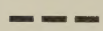
High School



Church



Desirable location for Island Breakwater.



Proposed Land Fill Limit.



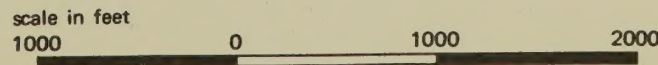
Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON · WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT



DUNDAS
UNIT 18

**LAND USE CONCEPT
UNIT MAP LEGEND**



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

School



High School



Church



Desirable location for Island Breakwater.



Proposed Land Fill Limit.



Study Area and Unit Boundary.

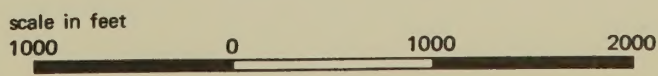
W13

Text Reference Number.



THE HALTON · WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT



DUNDAS

UNIT 19

**LAND USE CONCEPT
UNIT MAP LEGEND**

 Street-End Park or Creek-Mouth Park

 Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.

 Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.

 Institution, Club or Public Utility

School



High School



Church



• • • • Desirable location for Island Breakwater.

--- Proposed Land Fill Limit.

 Study Area and Unit Boundary.

W13 Text Reference Number.

**LAND USE CONCEPT
UNIT MAP LEGEND**



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

School



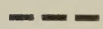
High School



Church



Desirable location for Island Breakwater.



Proposed Land Fill Limit.



Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON · WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



**DUNDAS
HAMILTON
UNIT 22**

LAND USE CONCEPT UNIT MAP LEGEND

 Street-End Park or Creek-Mouth Park

 Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.

 Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.

 Institution, Club or Public Utility

School



High School



Church

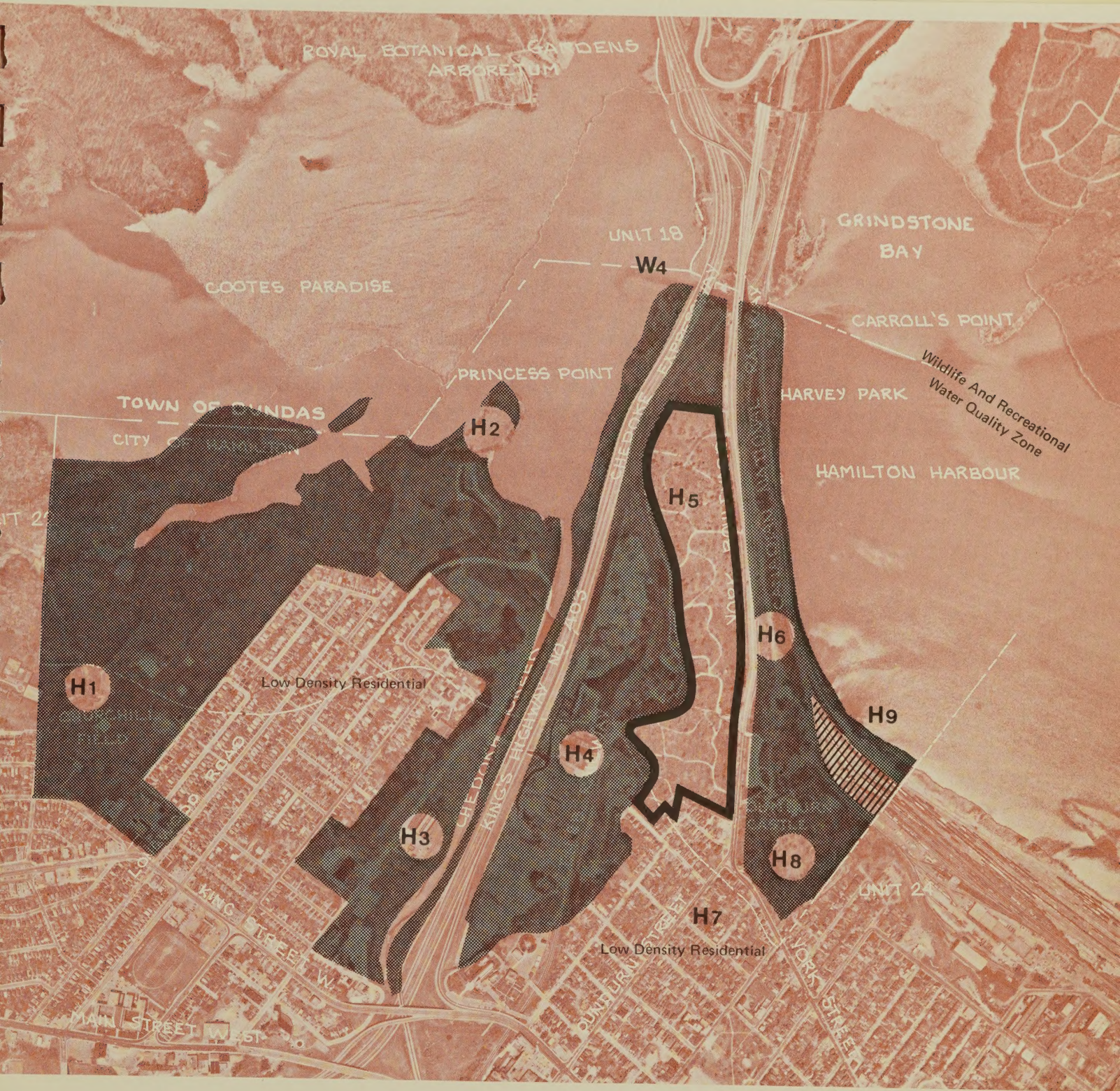


• • • • Desirable location for Island Breakwater.

--- Proposed Land Fill Limit.

 Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON-WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



**HAMILTON
UNIT 23**

**LAND USE CONCEPT
UNIT MAP LEGEND**



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.

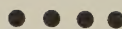


Institution, Club or Public Utility

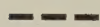
School

High School

Church



Desirable location for Island Breakwater.

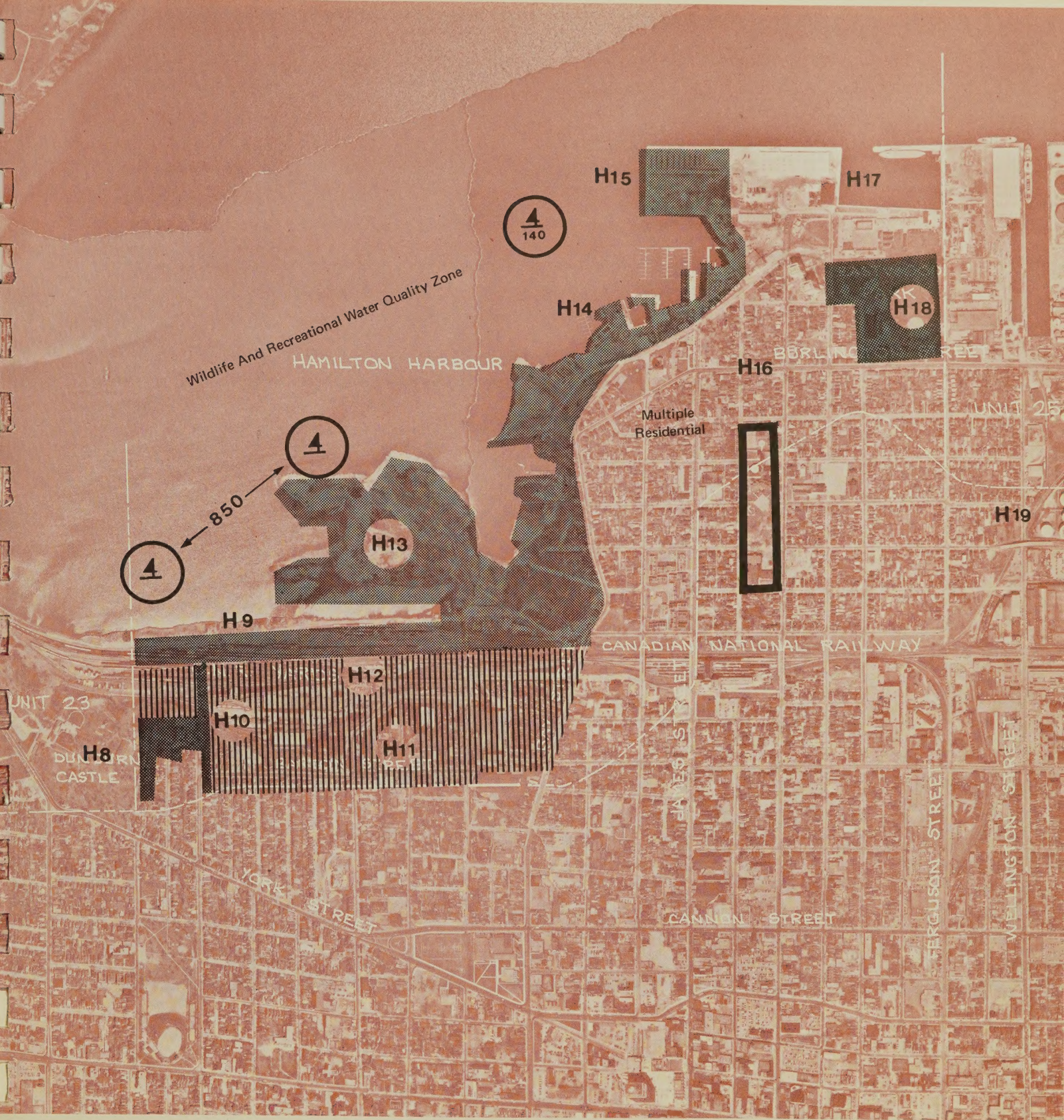


Proposed Land Fill Limit.



Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON-WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



HAMILTON
UNIT 24

**LAND USE CONCEPT
UNIT MAP LEGEND**



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

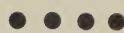
School



High School



Church



Desirable location for Island Breakwater.

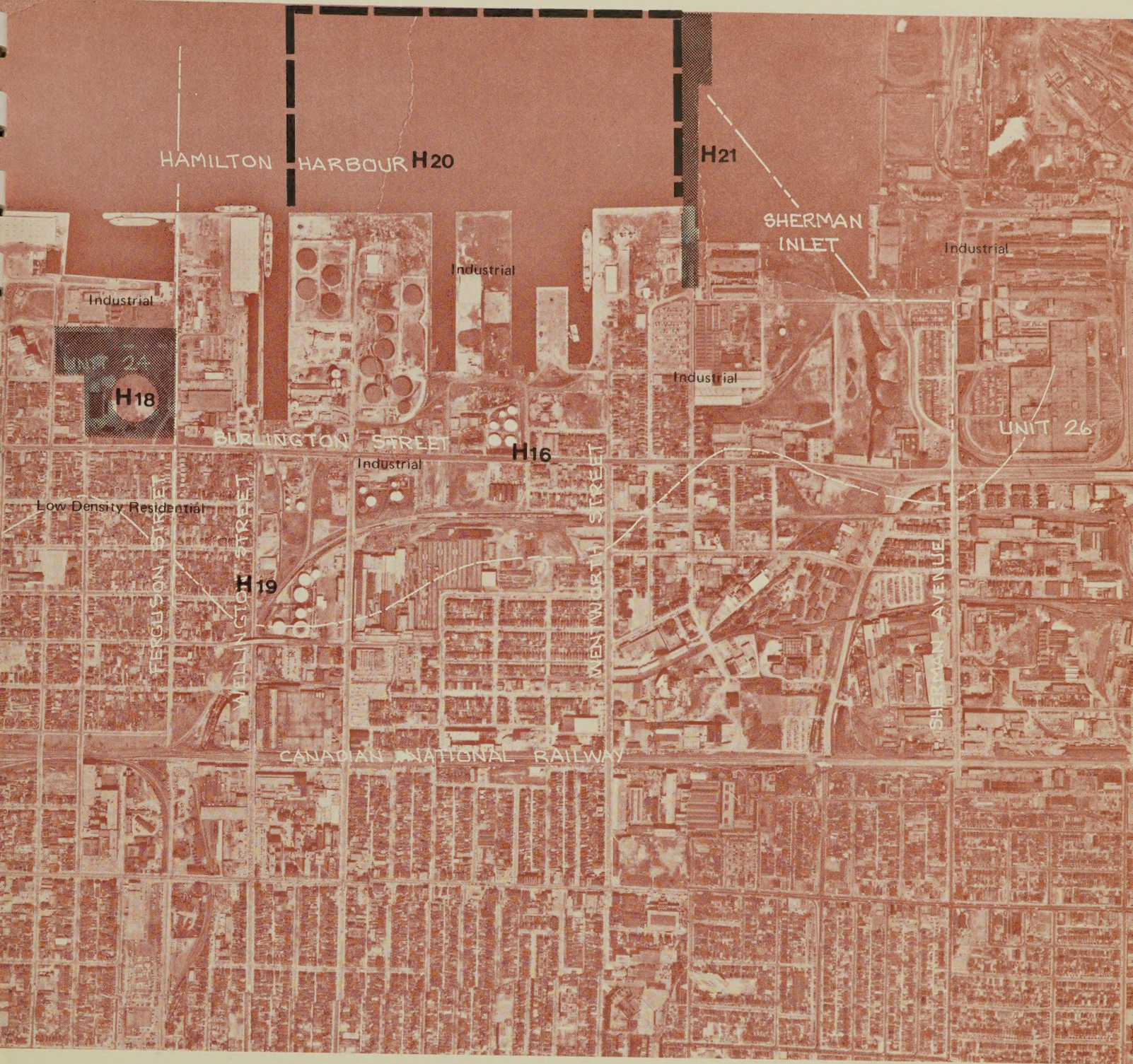


Proposed Land Fill Limit.



Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON-WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000

0

1000

2000



**HAMILTON
UNIT 25**

**LAND USE CONCEPT
UNIT MAP LEGEND**

 Street-End Park or Creek-Mouth Park

 Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.

 Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.

 Institution, Club or Public Utility

School



High School



Church

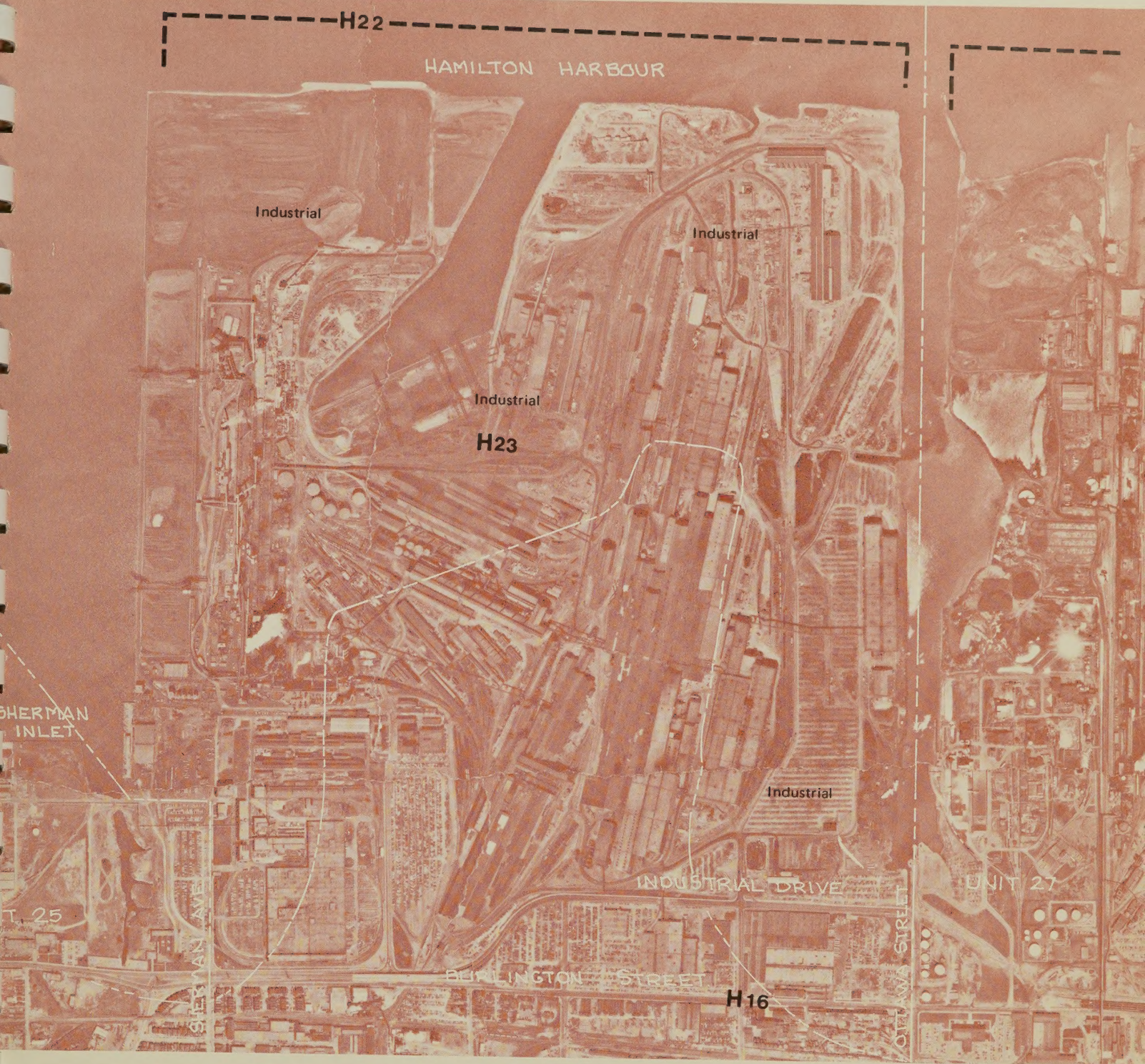


• • • • Desirable location for Island Breakwater.

— — — Proposed Land Fill Limit.

 Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON-WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000

0

1000

2000



**HAMILTON
UNIT 26**

LAND USE CONCEPT UNIT MAP LEGEND



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

School



High School



Church



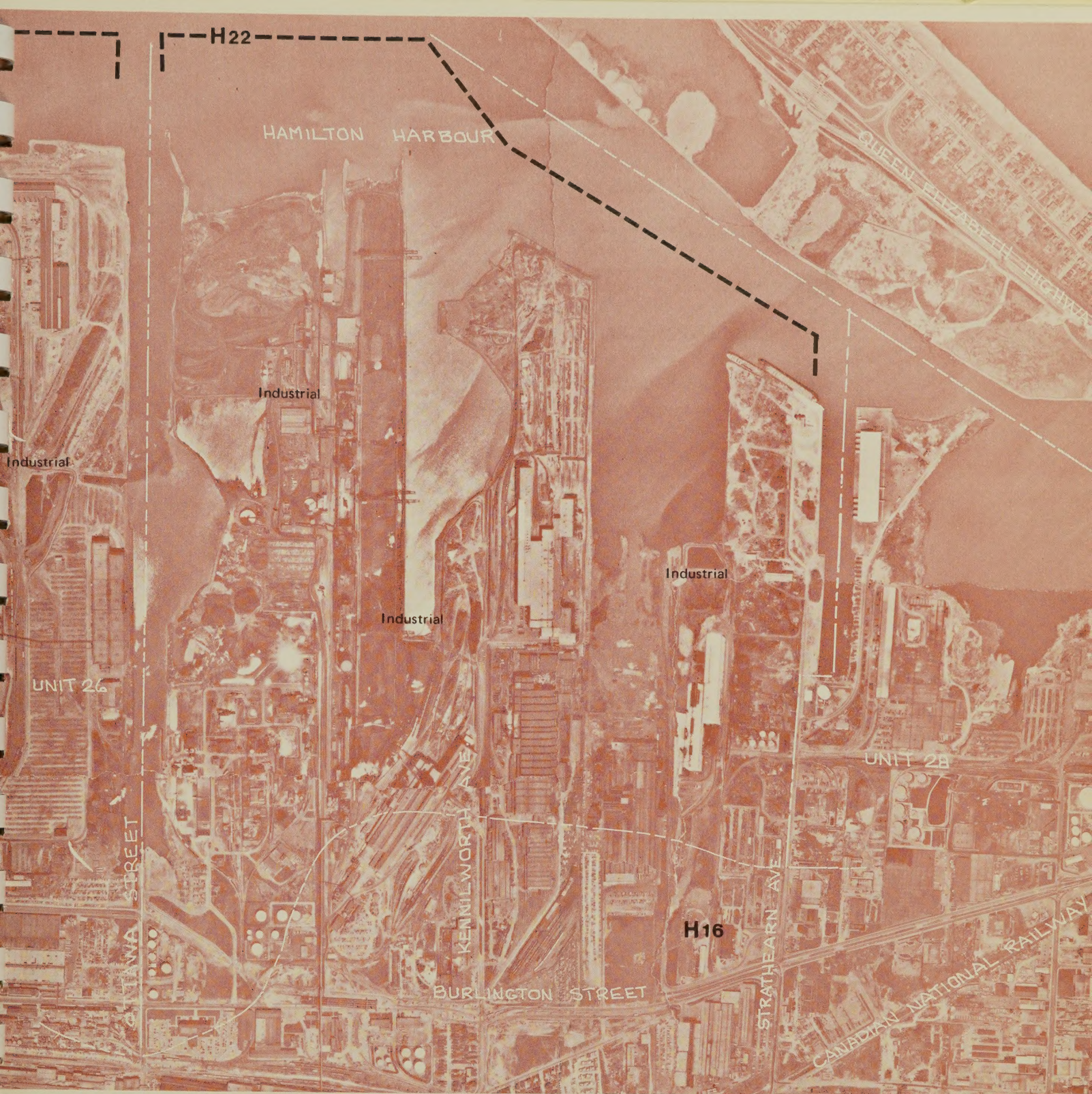
• • • • Desirable location for Island Breakwater.

--- Proposed Land Fill Limit.



Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON-WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



HAMILTON
UNIT 27

**LAND USE CONCEPT
UNIT MAP LEGEND**



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

School



High School



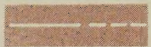
Church



Desirable location for Island Breakwater.

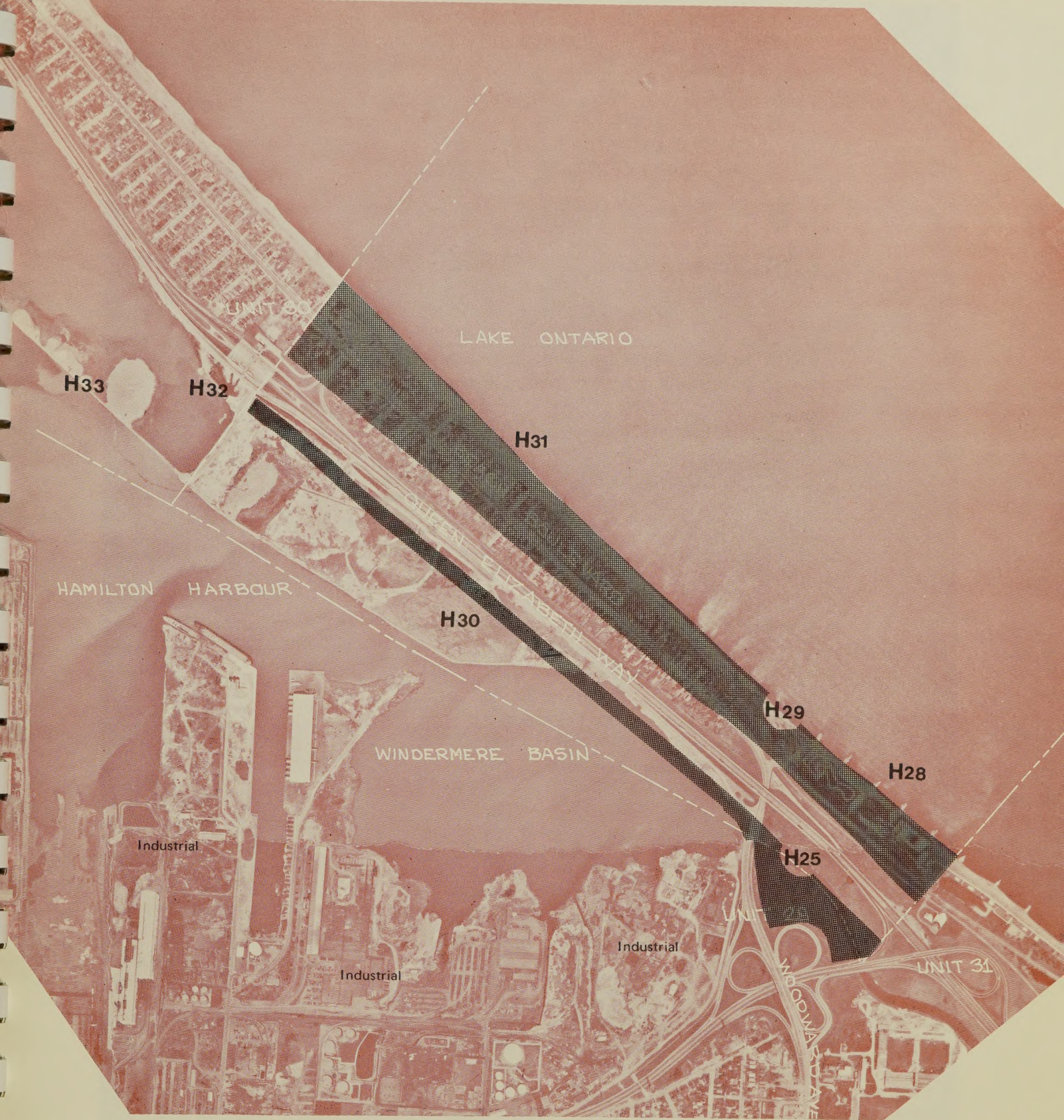


Proposed Land Fill Limit.



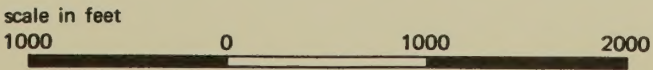
Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON · WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT



**HAMILTON
UNIT 29**

**LAND USE CONCEPT
UNIT MAP LEGEND**

 Street-End Park or Creek-Mouth Park

 Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.

 Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.

 Institution, Club or Public Utility

School



High School



Church

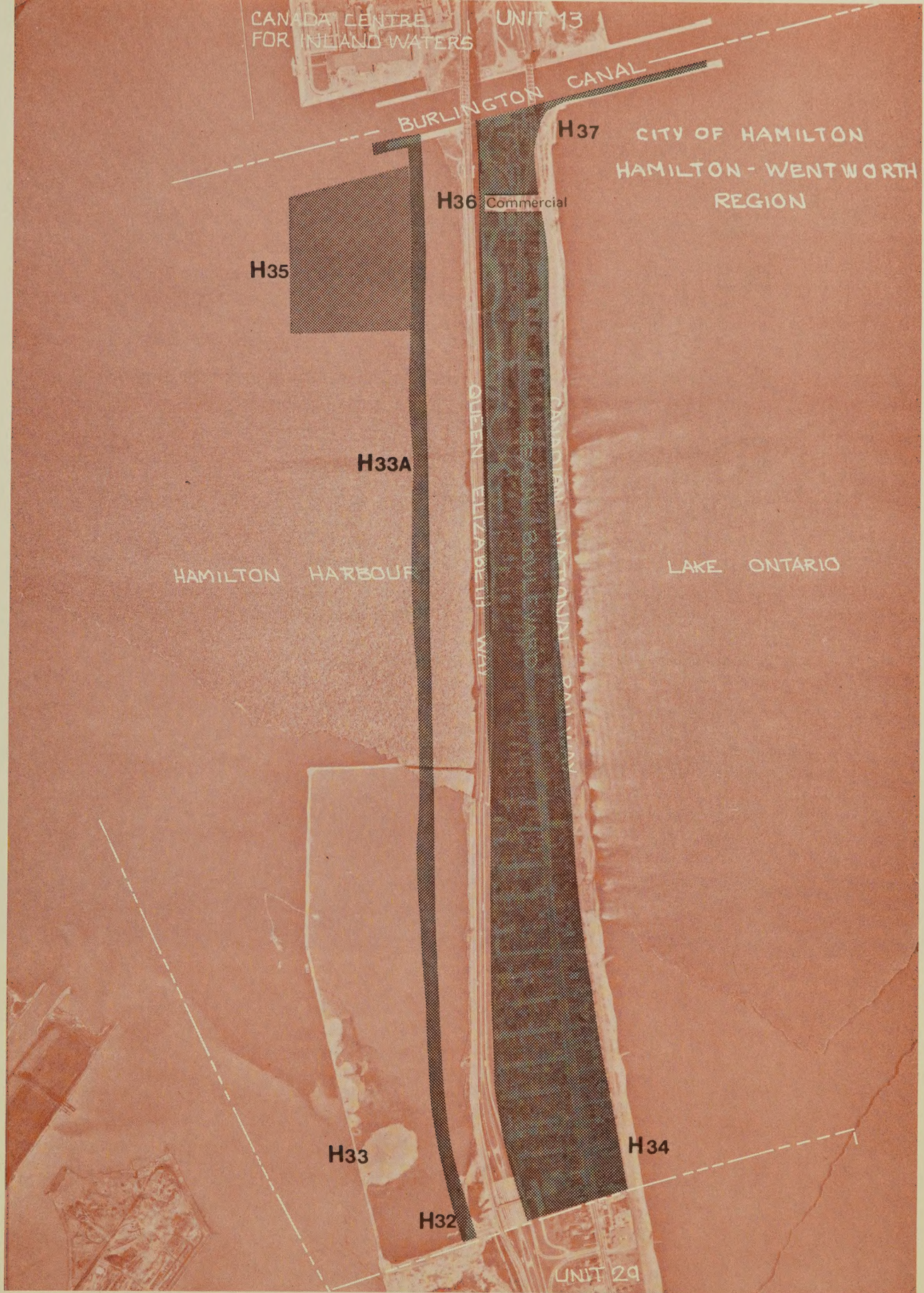


● ● ● ● Desirable location for Island Breakwater.

--- Proposed Land Fill Limit.

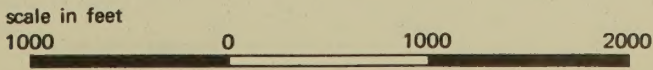
 Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON - WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT



**HAMILTON
UNIT 30**

**LAND USE CONCEPT
UNIT MAP LEGEND**



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

School

High School

Church



Desirable location for Island Breakwater.

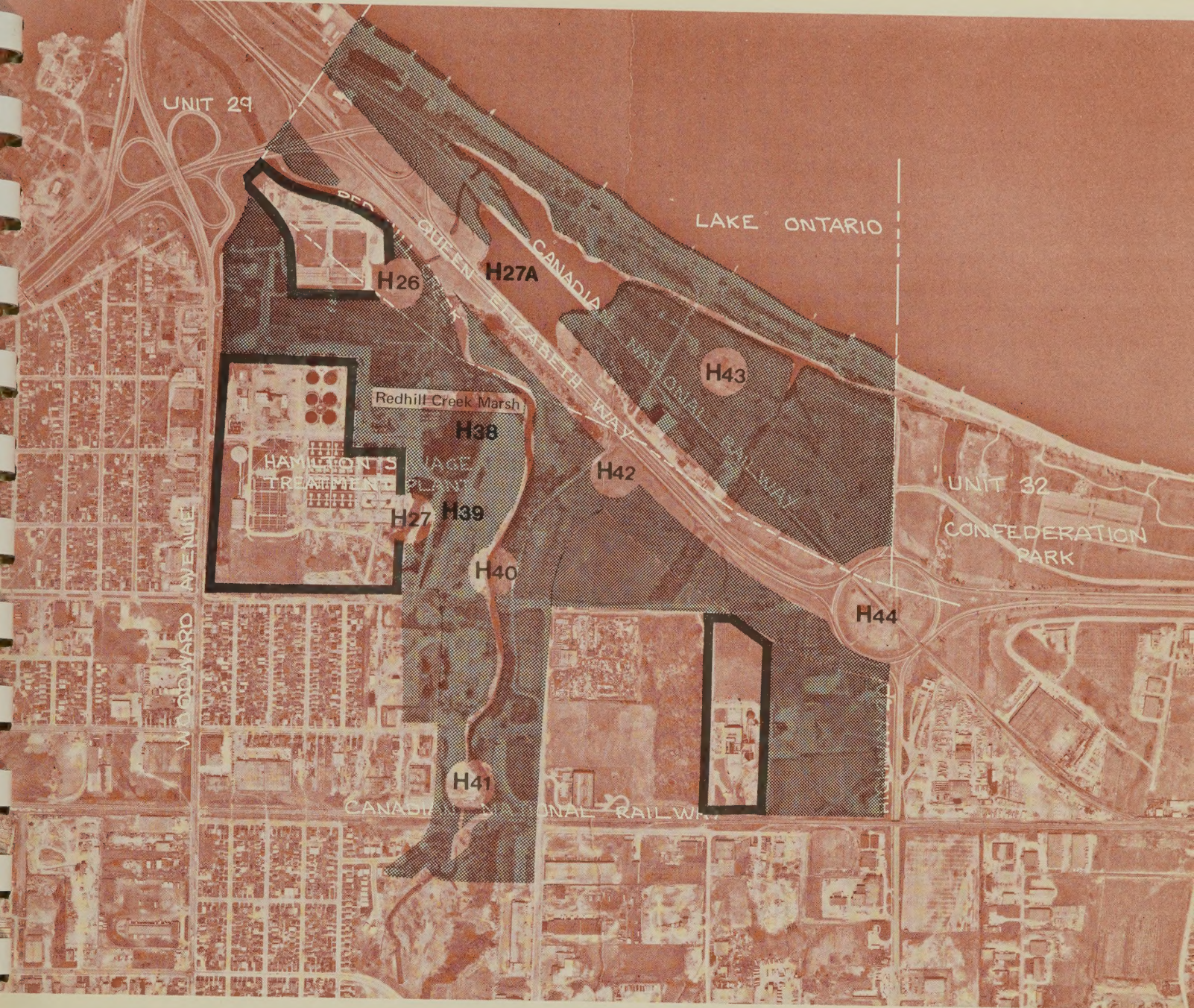


Proposed Land Fill Limit.



Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON · WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



**HAMILTON
UNIT 31**

**LAND USE CONCEPT
UNIT MAP LEGEND**

 Street-End Park or Creek-Mouth Park

 Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.

 Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.

 Institution, Club or Public Utility

School



High School



Church

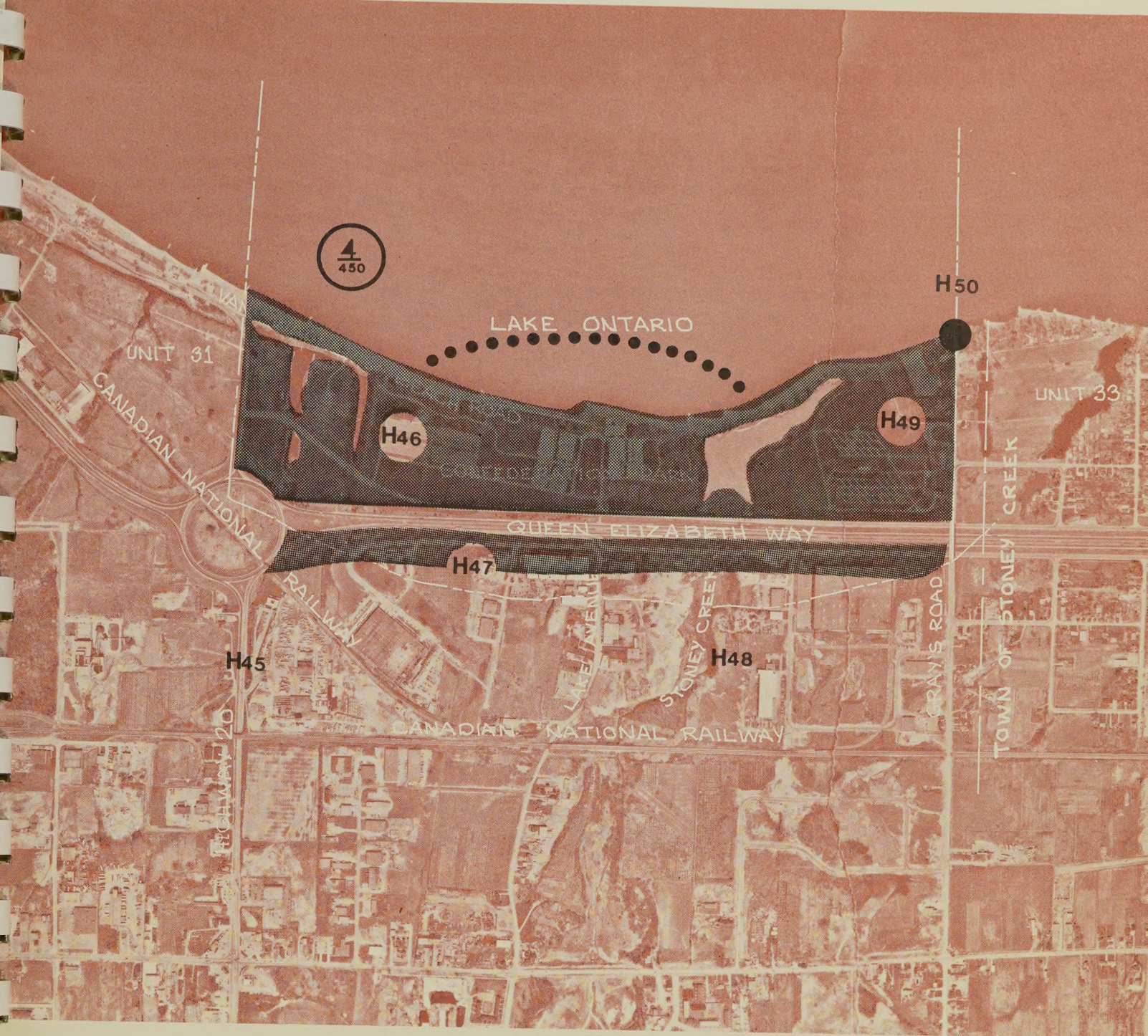


• • • • Desirable location for Island Breakwater.

— — — Proposed Land Fill Limit.

 Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON · WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



HAMILTON
UNIT 32

**LAND USE CONCEPT
UNIT MAP LEGEND**



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

School



High School



Church



Desirable location for Island Breakwater.

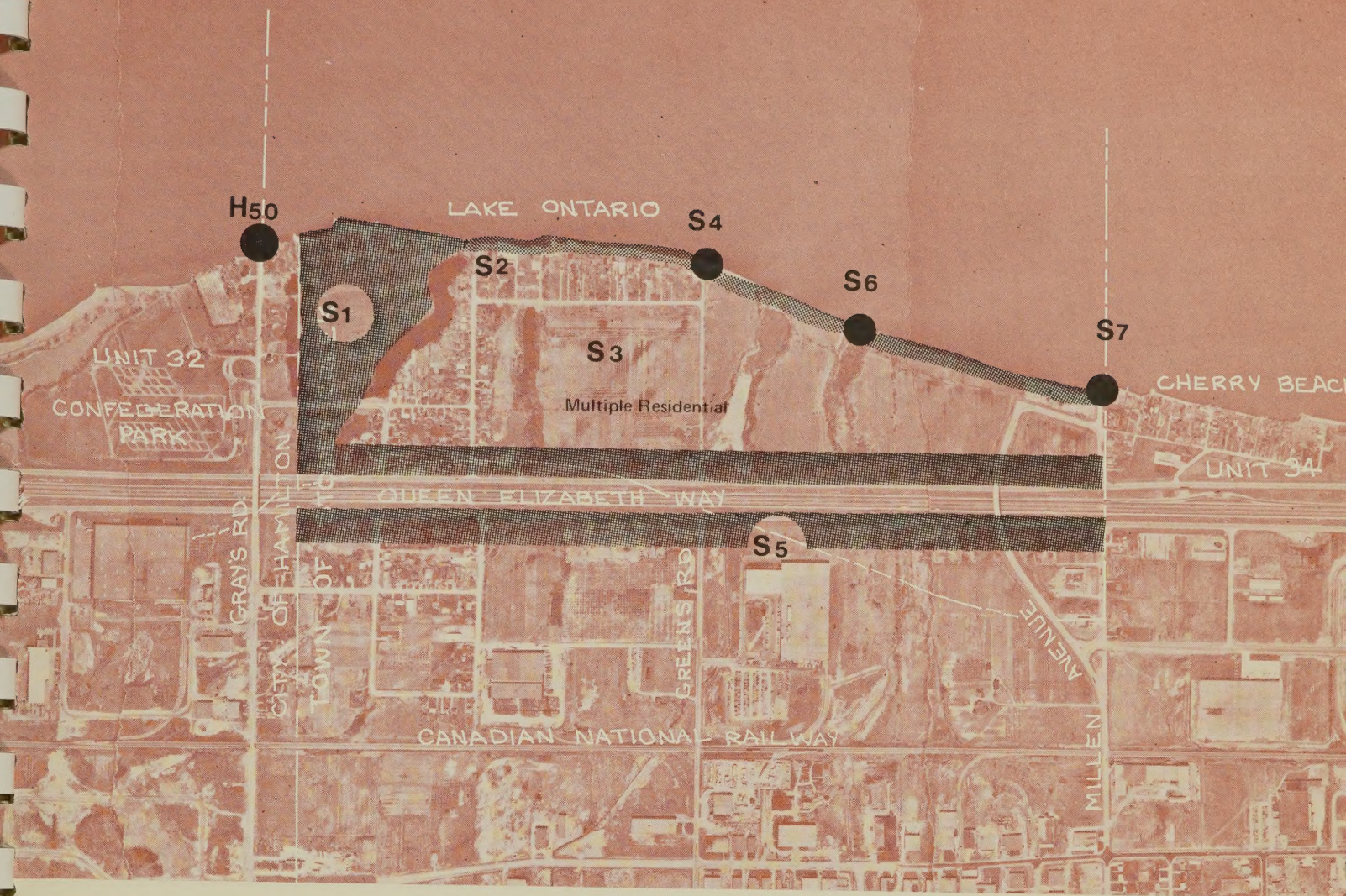


Proposed Land Fill Limit.



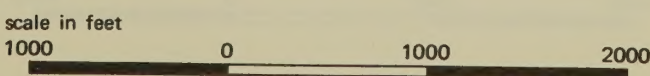
Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON · WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT



STONEY CREEK
UNIT 33

LAND USE CONCEPT
UNIT MAP LEGEND

 Street-End Park or Creek-Mouth Park

 Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.

 Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.

 Institution, Club or Public Utility

School



High School



Church

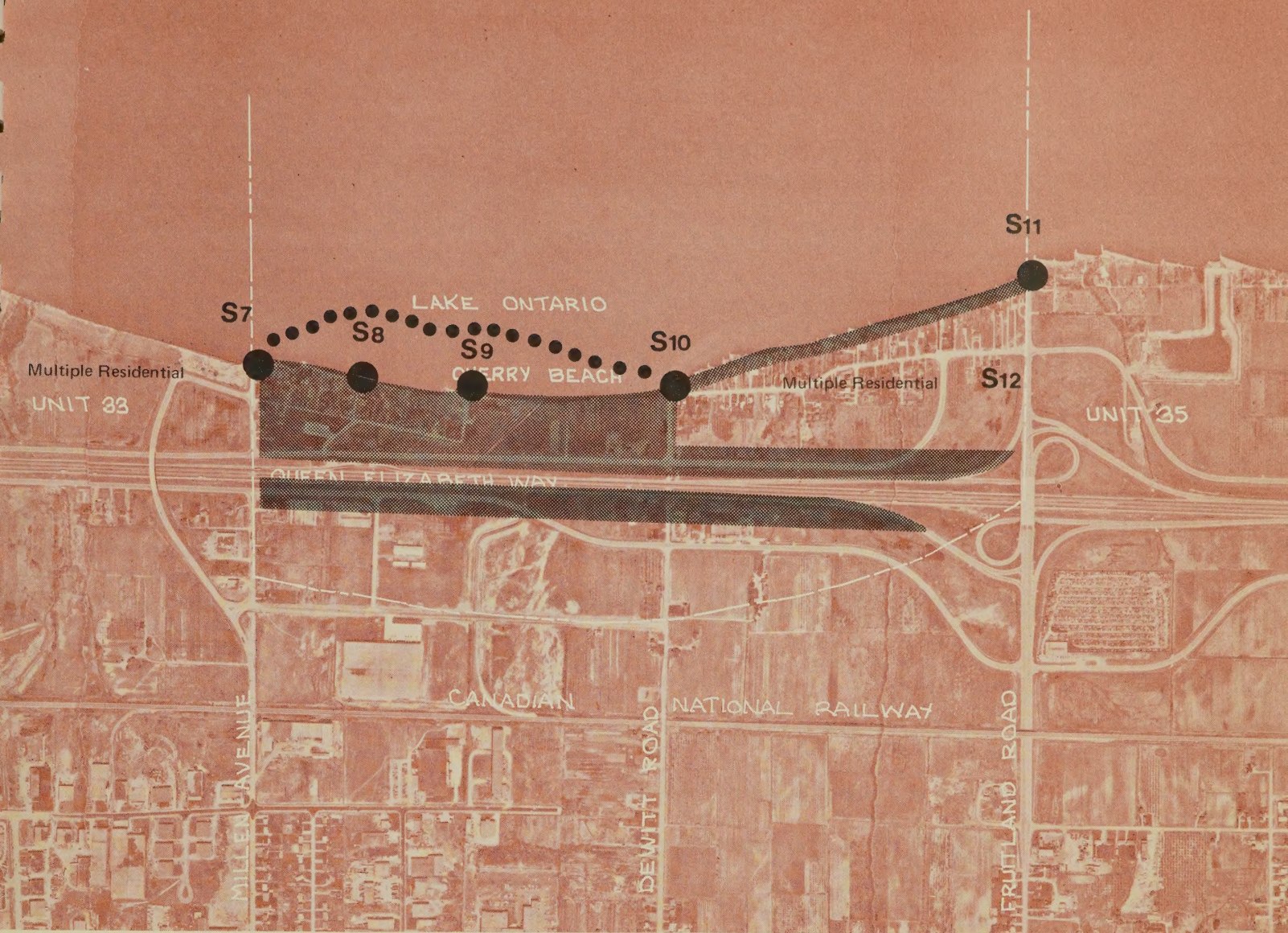


• • • • Desirable location for Island Breakwater.

--- Proposed Land Fill Limit.

 Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON-WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



**STONEY
CREEK
UNIT 34**

**LAND USE CONCEPT
UNIT MAP LEGEND**



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

School



High School



Church



Desirable location for Island Breakwater.

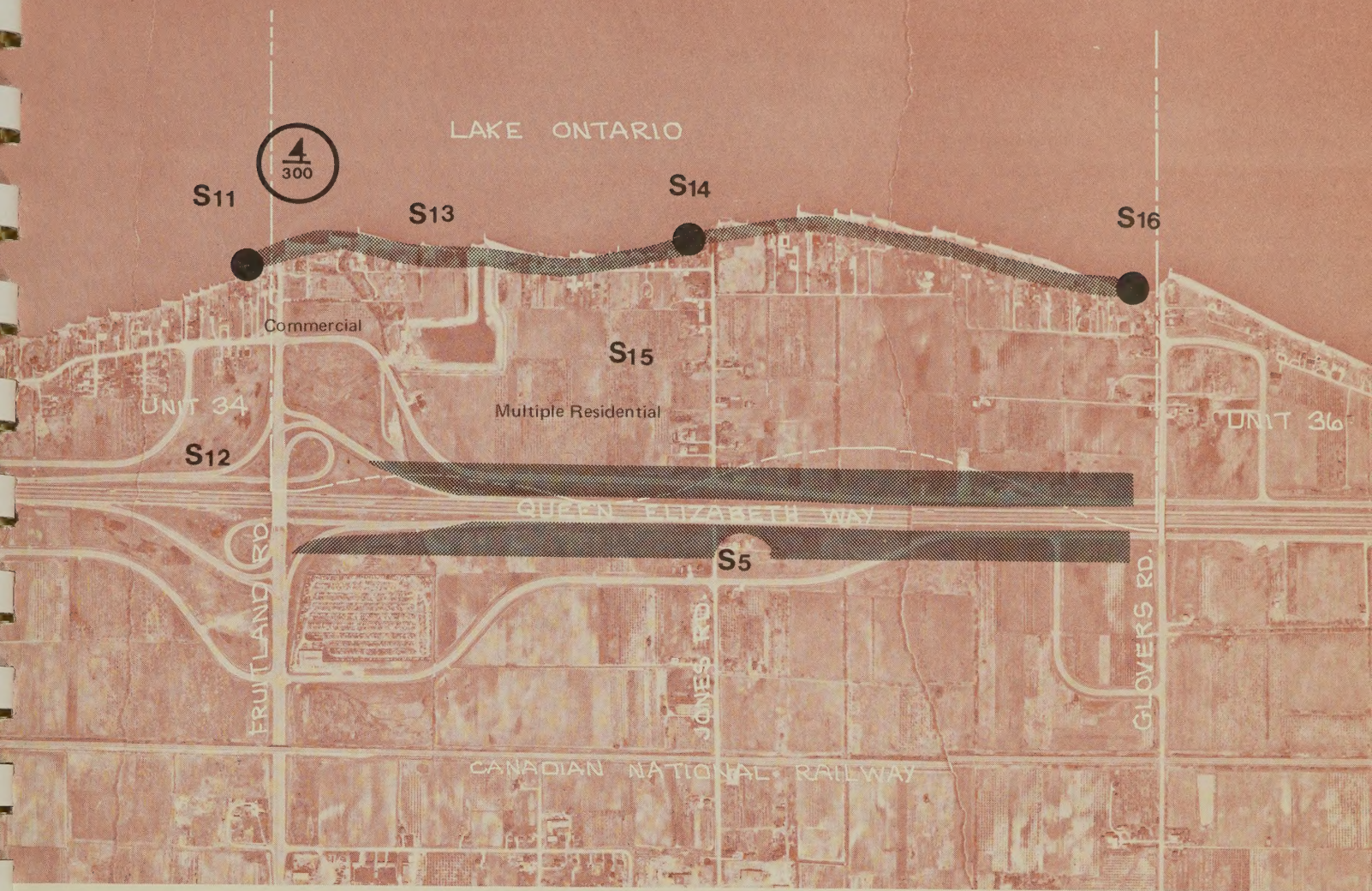


Proposed Land Fill Limit.



Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON · WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



**STONEY
CREEK
UNIT 35**

LAND USE CONCEPT
UNIT MAP LEGEND



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

School



High School



Church



Desirable location for Island Breakwater.

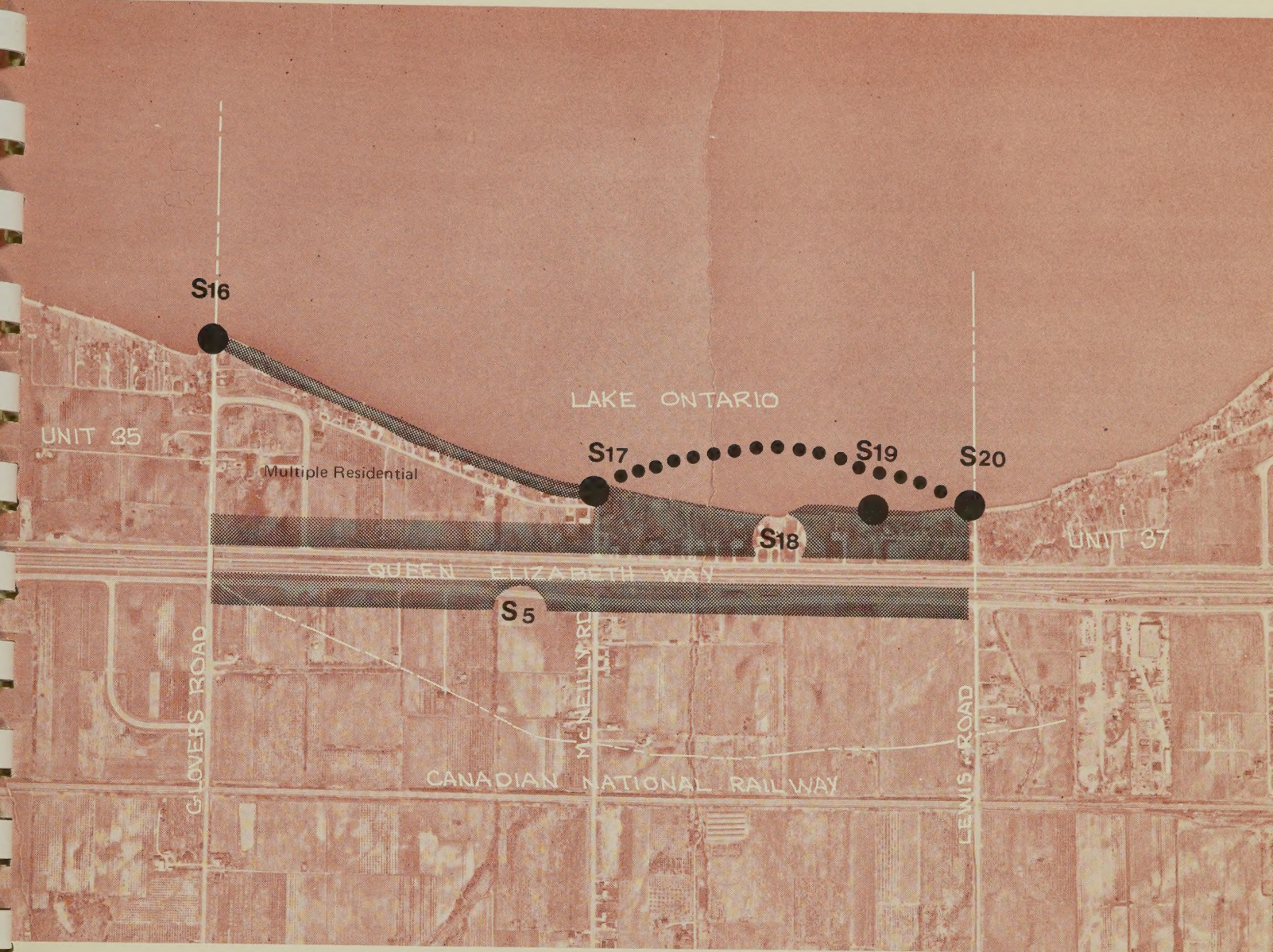


Proposed Land Fill Limit.



Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON · WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000

0

1000

2000



**STONE
CREEK
UNIT 36**

**LAND USE CONCEPT
UNIT MAP LEGEND**



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

School



High School



Church



Desirable location for Island Breakwater.

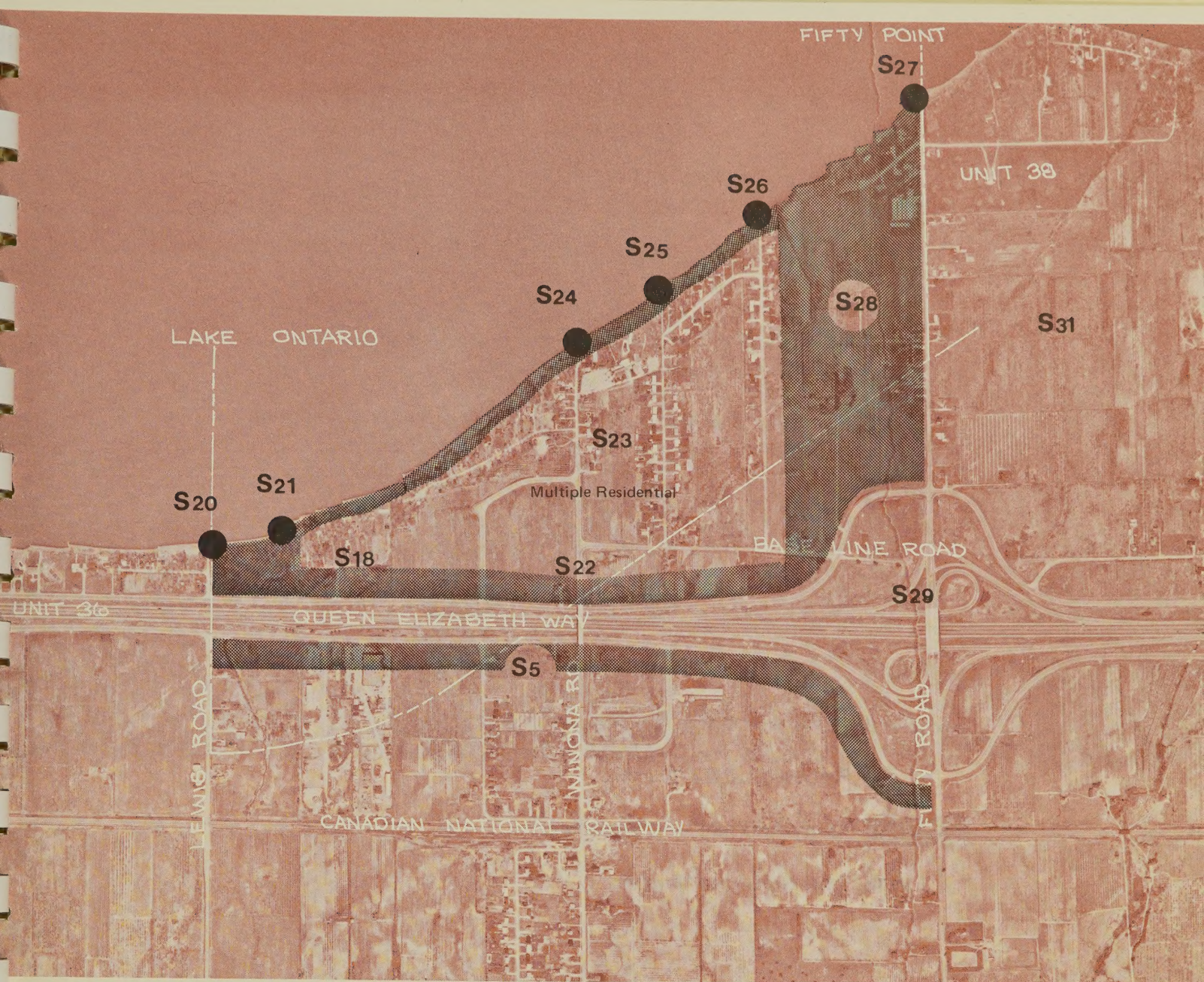


Proposed Land Fill Limit.



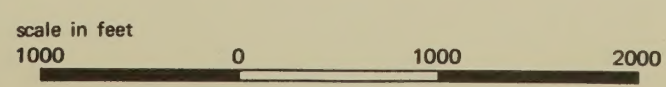
Study Area and Unit Boundary.

W13 Text Reference Number.



THE HALTON-WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT



STONEY CREEK UNIT 37

LAND USE CONCEPT UNIT MAP LEGEND



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

School



High School



Church



Desirable location for Island Breakwater.



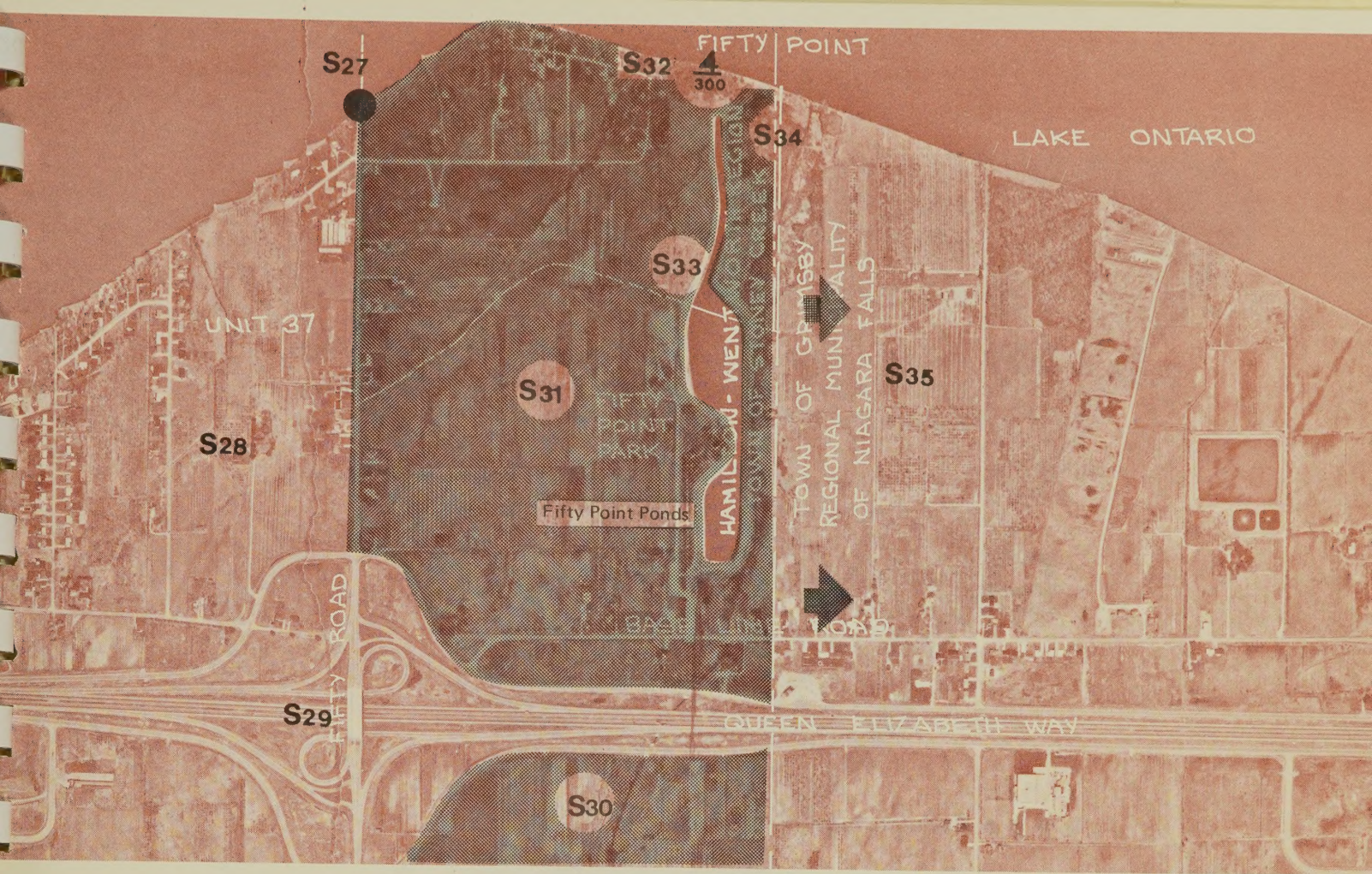
Proposed Land Fill Limit.



Study Area and Unit Boundary.

W13

Text Reference Number.



THE HALTON - WENTWORTH WATERFRONT STUDY

LAND USE CONCEPT

scale in feet
1000 0 1000 2000



**STONEY
CREEK
UNIT 38**

**LAND USE CONCEPT
UNIT MAP LEGEND**



Street-End Park or Creek-Mouth Park



Recreational Area, Including: Regional Park, Community Park, Stream Valley Trail, Stream Valley Protection Area, Neighbourhood Park, Shorefront Promenade.



Relatively large area with redevelopment potential for housing or recreation; now in estate use or single ownership.



Institution, Club or Public Utility

School



High School



Church



Desirable location for Island Breakwater.

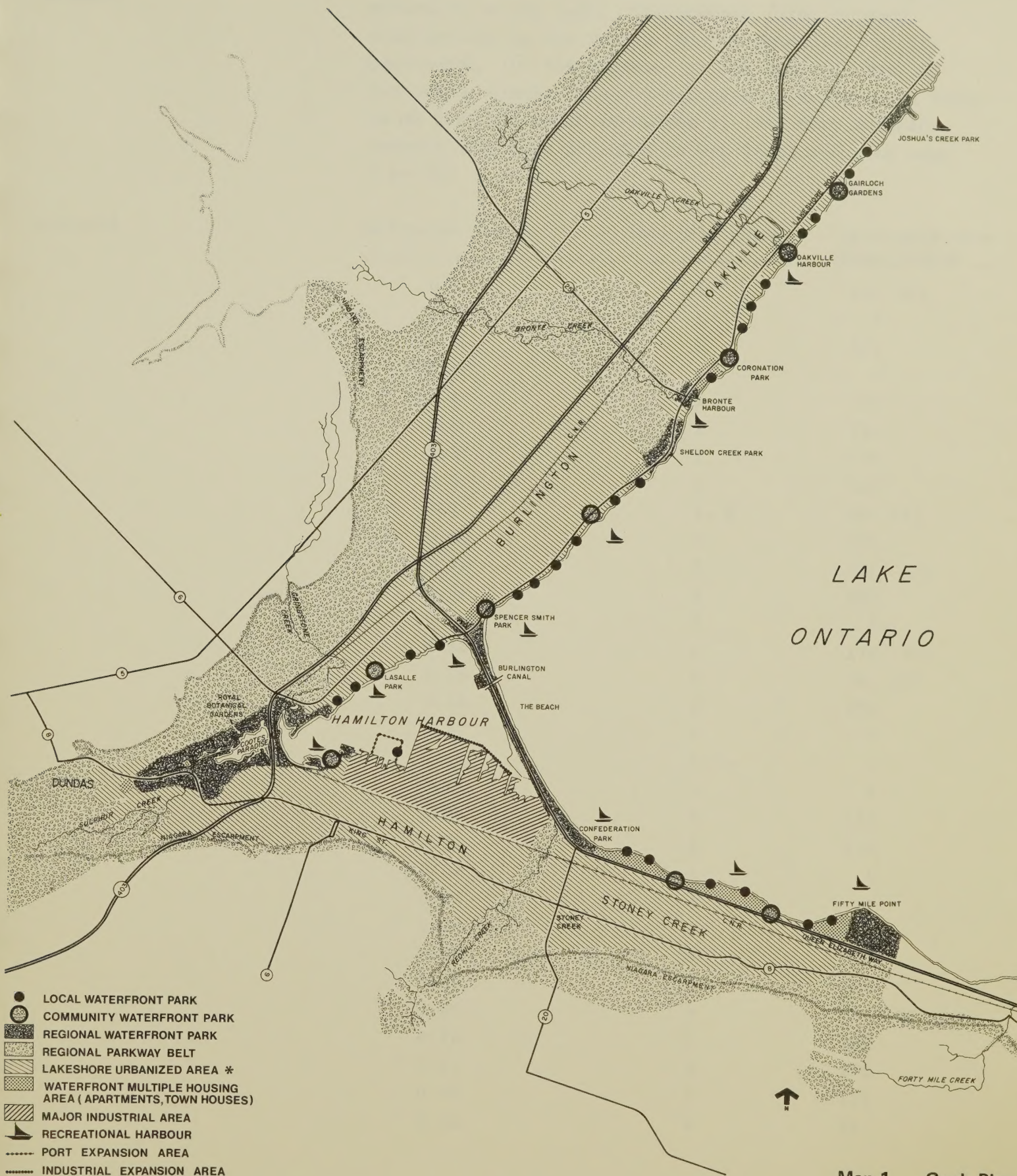


Proposed Land Fill Limit.



Study Area and Unit Boundary.

W13 Text Reference Number.



* FROM: THE TORONTO CENTRED REGION PLAN

Map 1 Goals Plan
HALTON-WENTWORTH WATERFRONT STUDY

INDEX TO MAP REFERENCE
NUMBERS

The following index is to facilitate the readers map reference to the text. The numbers refer to each municipality by the prefix 'O' for Oakville, 'B' for Burlington, 'D' for Dundas, 'H' for Hamilton and 'S' for Stoney Creek. The (*) has been inserted where there is no text reference in Volume 1. The text reference numbers have been included on Map 2 and the unit maps 1 to 38.

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Map 2 Land Use Concept

- RESIDENTIAL, LOW DENSITY
- RESIDENTIAL, MULTIPLE DENSITY
- COMMERCIAL
- INDUSTRIAL
- INSTITUTION, CLUB OR PUBLIC UTILITY
- RECREATION
- STREET-END PARK OR CREEK MOUTH PARK
- PUBLIC SHORE (PROMENADE) OR CREEK VALLEY TRAIL
- DESIRABLE LOCATION FOR ISLAND BREAKWATER
- RECREATIONAL HARBOUR AND PROPOSED NUMBER OF FUTURE BOAT SLIPS
- RELATIVELY LARGE AREA WITH REDEVELOPMENT POTENTIAL FOR HOUSING OR RECREATION; NOW IN ESTATE USE OR SINGLE OWNERSHIP
- PROPOSED LANDFILL LIMIT
- EXISTING LANDFILL; RECOMMENDED TO BE REMOVED

NORTH
1 5 0 MILES 1 2

HALTON · WENTWORTH
WATERFRONT STUDY

Project
Planning
Associates
Limited

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